for Economical Transportation

CHEVROLET

Instructions for the Operation and Care of

CHEVROLET MOTOR CARS

UNIVERSAL
SERIES AD

JANUARY 1, 1930

CHEVROLET MOTOR CO.
Division of General Motors Corporation
DETROIT - - MICHIGAN

Printed in U. S. A

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CHAPTER I

GENERAL INFORMATION

CHEVROLET STANDARD WARRANTY

WARRANTY

It is expressly agreed that there are no warranties, expressed or implied, made by the Dealer or the Manufacturer on Chevrolet motor vehicles, chassis or parts furnished hereunder except as follows:

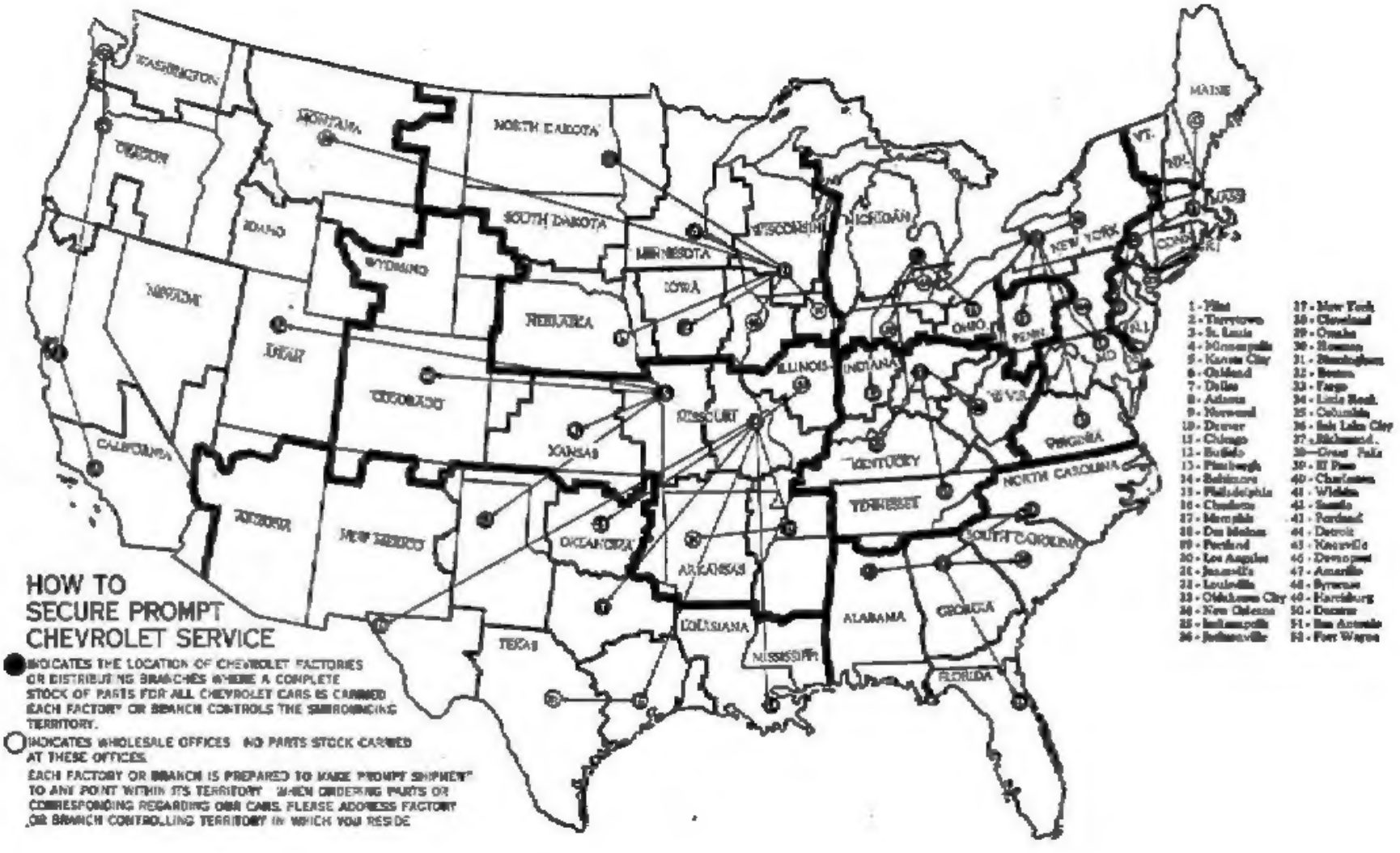
"The Manufacturer warrants each new motor vehicle (including original equipment placed thereon by the manufacturer except tires), chassis or part manufactured by it to be free from defects in material or workmanship under normal use and service, its obligation under this warranty being limited to making good at its factory any part or parts thereof which shall, within ninety (90) days after delivery of such vehicle to the original purchaser or before such vehicle has been driven 4,000 miles, whichever event shall first occur, be returned to it with transportation charges prepaid and which its examination shall disclose to its satisfaction to have been thus defective; This warranty being expressly in lieu of all other warranties, expressed or implied, and all other obligations or liabilities on its part, and it neither assumes nor authorizes any other person to assume for it any other liability in connection with the sale of its vehicles. This warranty shall not apply to any vehicle which shall have been repaired or altered outside of an authorized Chevrolet Service Station in any way so as in the judgment of the Manufacturer to affect its stability and reliability, nor which has been subject to misuse, negligence or accident."

The Dealer agrees to install any part or parts furnished under the Manufacturer's warranty above on the motor vehicle covered in this order without charge to the owner of such motor vehicle.

This warranty does not apply to second-hand cars or cars not mentioned in the above order.

POLICY

The Dealer also agrees to promptly perform and fulfill all terms and conditions of the Owner Service Policy.


WASHINGTON
OREGON
CALIFORNIA
IDAHO
NEVADA
MONTANA
WYOMING
UTAH
ARIZONA
COLORADO
NEW MEXICO
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
OKLAHOMA
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
LOUISIANA
WISCONSIN
ILLINOIS
MICHIGAN
INDIANA
OHIO
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
W. VA.
PENN.
N.Y.
MD.
N.J.
CONN.
MASS.
VT.
N.H.
MAINE
HOW TO
SECURE PROMPT
CHEVROLET SERVICE
● INDICATES THE LOCATION OF CHEVROLET FACTORIES OR DISTRIBUTING BRANCHES WHERE A COMPLETE STOCK OF PARTS FOR ALL CHEVROLET CARS IS CARRIED EACH FACTORY OR BRANCH CONTROLS THE SURROUNDING TERRITORY.
○ INDICATES WHOLESALE OFFICES NO PARTS STOCK CARRIED AT THESE OFFICES.
EACH FACTORY OR BRANCH IS PREPARED TO MAKE PROMPT SHIPMENT TO ANY POINT WITHIN ITS TERRITORY WHEN ORDERING PARTS OR CORRESPONDING REGARDING OUR CARS, PLEASE ADDRESS FACTORY OR BRANCH CONTROLLING TERRITORY IN WHICH YOU RESIDE
1 - Flint
2 - Tarrytown
3 - St. Louis
4 - Minneapolis
5 - Kansas City
6 - Oakland
7 - Dallas
8 - Atlanta
9 - Norwood
10 - Denver
11 - Chicago
12 - Buffalo
13 - Pittsburgh
14 - Baltimore
15 - Philadelphia
16 - Cleveland
17 - Memphis
18 - Des Moines
19 - Portland
20 - Los Angeles
21 - Janesville
22 - Louisville
23 - Oklahoma City
24 - New Orleans
25 - Indianapolis
26 - Jacksonville
27 - New York
28 - Cleveland
29 - Omaha
30 - Bloomington
31 - Birmingham
32 - Boston
33 - Fargo
34 - Little Rock
35 - Columbia
36 - Salt Lake City
37 - Richmond
38 - Great Falls
39 - El Paso
40 - Charleston
41 - Wichita
42 - Seattle
43 - Portland
44 - Detroit
45 - Knoxville
46 - Davenport
47 - Amarillo
48 - Syracuse
49 - Harrisburg
50 - Decatur
51 - San Antonio
52 - Fort Wayne

DIRECTIONS FOR ORDERING PARTS

Always use GENUINE CHEVROLET PARTS for replacement and order them from your Authorized Chevrolet Dealer, so as to avoid the possibility of having purchased inferior or substitute parts. IT IS UNDERSTOOD AND AGREED THAT OUR STANDARD WARRANTY IS NULL AND VOID ON ANY CHEVROLET MODEL WHERE PARTS NOT MADE OR SOLD BY US ARE USED IN ANY REPLACEMENT OR OTHERWISE.

If replacement parts are ordered from our factories or branches, describe the parts completely and specify the car serial number, the location of which may be found on page 7.

If in doubt as to the proper name for the part required, send the broken part to the attention of the Parts and Service Manager, Parts and Service Department, prepaid, and write a letter the same date your shipment goes forward, stating the purpose for which the part was returned.

When ordering from a factory or branch, send remittance with order, as we cannot open accounts, except with our Authorized Dealers. Orders not accompanied by remittance will be dispatched C. O. D.

When ordering parts by telegram, always prepay the message. Collect messages will not be accepted by this company.

All Chevrolet Dealers carry a complete stock of essential parts; therefore, delays in the execution of your order will be eliminated by placing your order with your Authorized Chevrolet Dealer.

A complete stock of Chevrolet parts is carried at Factories and Branches, as indicated by the list on page 5 and the map on page 6.

FACTORIES AND BRANCHES

FACTORIES

Flint, Michigan
Oakland, Calif.
Janesville, Wis.
Tarrytown, N. Y.
Buffalo, N. Y.
Kansas City, Mo.
Norwood, Ohio
St. Louis, Mo.
Atlanta, Ga.

BRANCHES

Dallas, Texas
Baltimore, Md.
Portland, Oregon
Omaha, Neb.
Charlotte, N. C.
Memphis, Tenn.
New Orleans, La.
Knoxville, Tenn.
Philadelphia, Pa.
Great Falls, Mont.
Louisville, Kentucky
Houston, Texas
Minneapolis, Minn.
Denver, Colo.
Jacksonville, Fla.
Los Angeles, Calif.
Indianapolis, Ind.
Birmingham, Ala.
Salt Lake City, Utah
El Paso, Texas
Fargo, N. D.
Oklahoma City, Okla.
Pittsburgh, Pa.
Des Moines, Iowa
Cleveland, Ohio
Boston, Mass.
Amarillo, Texas
Richmond, Va.
Wichita, Kans.

Important Notice: SEND PARTS ORDERS to Factory or Branch. Wholesale Offices do not carry a Parts Stock. See Map on Page 6.

WHOLESALE OFFICES

Chicago, Ill.	San Antonio, Texas	Fort Wayne, Ind.
Columbia, S. C.	Little Rock, Ark.	Portland, Me.
Charleston, W. Va.	Detroit, Mich.	New York, N. Y.
Seattle, Wash.	Syracuse, N. Y.	Davenport, Iowa
Decatur, Ill.		Harrisburg, Pa.

MESSAGE TO CHEVROLET OWNERS

We welcome you as a Chevrolet owner and shall always be interested in your welfare.

The degree of success attained in the use of any automobile, regardless of price or kind, is a direct result and in direct proportion to the thought and effort expended in caring for that automobile. It therefore rests with the car owner to do the things recommended by us, or to see that they are properly done by his Authorized Chevrolet Dealer.

Like any piece of machinery, the automobile requires a certain amount of care at specified intervals and if your car is given this care, a maximum return on your investment, in transportation, may be expected, at the minimum cost per mile. The automobile manufacturer and Dealer both share in the responsibility of seeing to it that the car is delivered to the owner in first class condition, by the establishment of efficient methods of standardized maintenance, under the direction and supervision of mechanical experts.

Get the habit of making careful and periodic inspection. Keep all parts of the car clean and well lubricated (see Lubrication Chart, page 61).

A new car should not be driven faster than 25 miles per hour, for the first 500 miles.

The care given to a motor car during its first 1,000 miles governs, to a large extent, the length and satisfaction of its service.

LICENSE AND INSURANCE DATA

Car Serial Number:

Stamped on plate on right front seat frame, on all models, except Coach. Coach serial number on right sill, under carpet. (Check with Bill of Sale.)

Motor Number:

Stamped on a boss on right side of cylinder block, just back of the fuel pump. (Check with Bill of Sale).

Wheel Base: .....107"

Passenger Car Overall Length, less Bumpers:

Phaeton (Top Up) ..... 156"
Phaeton (Top Down) ..... 157"
All Others ..... 156"

Tread: ..... 56"

Tire Sizes:

Passenger Cars ..... 4.75" x 19"
One and One Half Ton Truck (Front) ..... 30" x 5.00"
One and One Half Ton Truck (Rear) ..... 30" x 5.00"
One and One Half Ton Truck (Optional Rear) ..... 32" x 6.00"
One Half Ton Truck Chassis (Front and Rear) ..... 4.75" x 19"

Motor:

Number of Cylinders 6
Bore ..... 3⅛"
Stroke ..... 3¾"
Horsepower (N. A. C. C.) 26.3
Piston Displacement ..... 194 cu. in.

Rear Axle Gear Ratio:

Passenger Cars and One Half Ton Truck ..... 4.10 to 1
One and One Half Ton Truck ..... 5.428 to 1

Shipping Weights, less Gas, Water and Extra Equipment:

Passenger Cars

Phaeton ..... 2280 lbs.
Roadster ..... 2195 lbs.
Sport Roadster ..... 2285 lbs.
Coupe ..... 2440 lbs.
Sport Coupe ..... 2515 lbs.
Sedan ..... 2655 lbs.
Club Sedan ..... 2610 lbs.
Coach ..... 2540 lbs.
Sedan Delivery ..... 2475 lbs.

Trucks

½ Ton Chassis—(Rear fenders and spare rim included) ..... 1835 lbs.
1½ Ton Chassis—(Rear fenders and spare rim included) ..... 2375 lbs.
1½ Ton Chassis—(Cab Body, Rear fenders and spare rim included) ..... 2710 lbs.

Add 90 lbs. for Road Weight.

NOTE:—These weights are compiled from all available statistics and are average weights from all plants, on which there is an allowable variation of fifty pounds.

CHAPTER II

OPERATION, CARE AND MAINTENANCE

PUTTING THE CAR IN MOTION

Seated in the car in the driver's seat, behind the steering wheel, one has the following operations to execute when putting the car in motion:

1st—See that the gear shift lever is in neutral position (moves freely from right to left). (Fig. 1).

2nd—Spark and throttle buttons on instrument panel (marked "Spark" and "Throttle" are in their proper position for starting—namely, open throttle slightly by pulling out "Throttle" button approximately one-quarter inch from instrument panel. Do not retard (pull out) the "Spark" button when starting the motor. When driving, both the throttle and spark buttons should be pushed in against the instrument panel as far as they will go. This position closes the throttle and advances the spark. (Fig. 2).

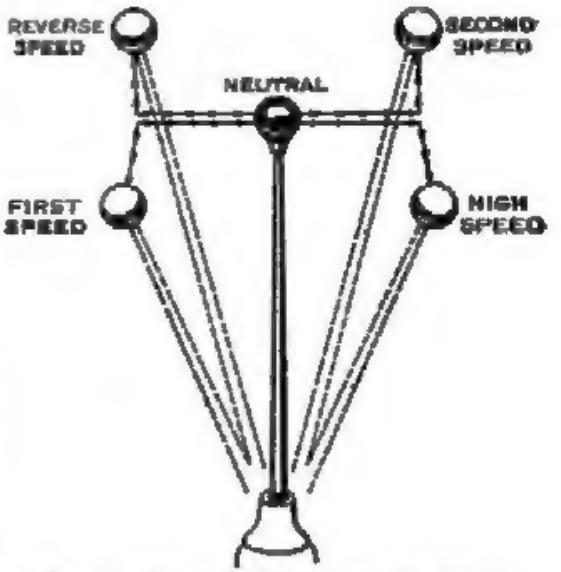


Fig. 1—Gear Shift Lever Position

3rd—Turn on ignition by inserting the key in the ignition lock on the instrument panel and turning to the right, which unlocks the lock and extrudes the lock barrel, thus closing the ignition circuit. To lock the ignition it is only necessary to push in on the lock plunger. (Fig. 2).

4th—Depress starter pedal, which extends through toe board, with right foot. (Fig. 2). REMOVE THE FOOT FROM THE STARTER PEDAL THE INSTANT THE MOTOR STARTS. DO NOT DEPRESS THE STARTER PEDAL THE SECOND TIME UNTIL THE MOTOR

HAS COME TO A COMPLETE REST. SERIOUS DAMAGE MAY BE DONE TO THE STARTING MOTOR AND FLYWHEEL IF THIS CAUTION IS NOT OBSERVED.

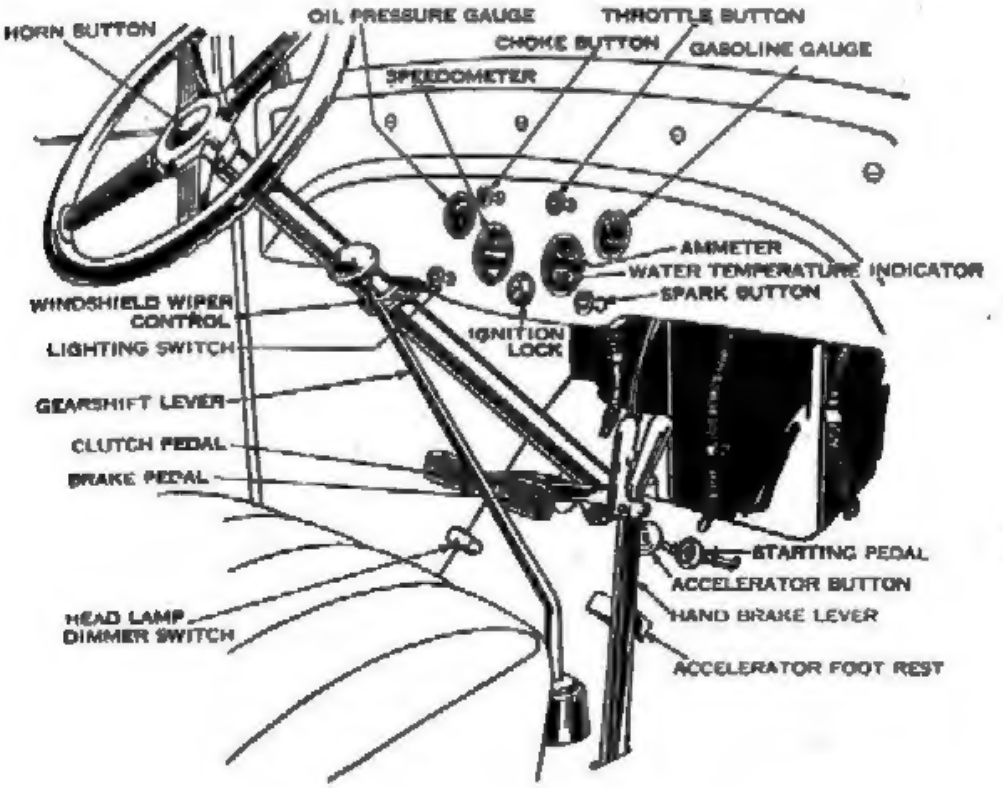


Fig. 2—Control Parts and Instruments

5th—If necessary (depending upon climatic conditions) pull out the "choke" button on the instrument panel as far as it will go for starting and as soon as the motor starts, let go of the button and it will return to its normal position.

If the motor runs at an excessive rate of speed, after starting, the throttle button should be pushed in slightly until the right speed is obtained. If the motor continues to run irregularly, pull out the choke button a short ways and hold there until the motor is warm and runs smoothly. When the motor is warm and runs smoothly let go of the choke button and it will return to its normal position.

6th—Release emergency brake.

7th—Push down on the clutch pedal with the left foot (Fig. 2) until the clutch is completely disengaged.

8th—Move the gear shift lever from the neutral position into FIRST or low speed position, by moving it first to the left as far as it will go, and then backward. (Fig. 1). During this operation avoid the left hand front or reverse position.

During any movement of the gear shift lever (other than its neutral position) the clutch pedal is continually depressed. With the lever in first speed position, gradually engage the clutch by slowly raising the left foot. Practice makes perfect in this operation. Engaging the clutch rapidly is unpleasant to the occupants of the car and also injurious to the entire mechanism.

While in low speed position, the motor will run comparatively fast, yet the car will travel slowly. In order to increase the car speed, push the accelerator pedal (Fig. 2) slightly with the right foot.

9th—After the car has gained sufficient momentum, prepare to change to SECOND speed. Before shifting from first to second speed, depress the clutch pedal, then move the gear shift lever (Fig. 1), forward to the neutral position, thence to the right as far as it will go, thence forward to second speed. After these operations have been performed with the clutch disengaged, slowly lighten the foot pressure on the clutch pedal until it is engaged and the car moves forward. Accelerate by pressing the accelerator pedal.

10th—Next, depress the clutch and pull the gear shift lever straight back as far as it will go, into THIRD or high speed position. Again, slowly lighten the foot pressure on the clutch pedal until it is completely engaged.

Under no circumstances should one attempt to shift to reverse speed position until the car has come to a complete stop.

To avoid clashing when engaging the gears, pause a few seconds between the operation of depressing the clutch pedal and moving the gear shift lever.

When the gears clash, press down a little more upon the clutch pedal and wait a few seconds before making the shift.

The fundamental requirements in every change of gears are that the gears, to be meshed together, shall revolve at as nearly the same speed as possible, and it sometimes requires a slight pause in the shift to accomplish this result.

CONTROL OF MOTOR SPEEDS

It is injurious to race the motor. Do not run the motor at high speeds without load.

After the motor is started and runs smoothly, completely close the throttle button on the instrument panel. The motor speed will be fast enough to maintain its operation.

At this time, it is well for the novice to learn the various controlling devices and their effect upon motor speed. This may be done by opening and closing the throttle button or operating the accelerator pedal.

If the motor is laboring in sandy roads or on a hill, at low speed, the spark button should be pulled out a slight amount, to prevent an ignition or spark knock.

USE OF CHOKE OR PRIMER

It is a well known fact that a richer gasoline mixture is required to start an internal combustion motor in cold weather. This richer mixture is obtained by pulling out the choke button on the instrument panel. However, the excessive use of the choke is detrimental to the efficient operation of the motor.

ACCELERATOR

The accelerator pedal (Fig. 2) is located adjacent to the service brake pedal on the toe board. Pressing down on this pedal causes the motor to speed up or accelerate. When pressure is released, a spring returns it to its normal position. Moving the throttle button out or in opens and closes the throttle and this also moves the accelerator pedal down or up, but pressing the accelerator pedal does not move the throttle button. It is possible, therefore, to set the throttle button for any desired speed and when pressure is removed from the accelerator pedal, the motor will not stop but the speed will drop back to that which has been selected by the throttle button.

The throttle button may be used on a long drive, as an occasional relief to the foot, when the car may be driven for a considerable distance without speed change.

STOPPING THE CAR

When the decision has been made to stop the car, close the throttle button or remove your foot from the accelerator pedal. Allow the car to coast for a moment or two on its own momentum, then gradually press down on the service brake pedal (Fig. 2) until the car practically stops. However, just before the car has stopped, depress the clutch pedal, then move the gear shift lever into neutral position.

When the gear shift lever is in neutral position, the transmission gears, except the drive gear, are stationary and, although the pressure on the clutch pedal has been removed, the car will remain motionless, even though the motor continues to run. In other words, the clutch and transmission are the connecting links between the motor and the the rear axle.

PARKING THE CAR

If the stop is to be made for some duration of time, always stop the motor before leaving the car and lock the ignition by pushing the lock barrel in the ignition lock. (Fig. 2.) Also, set the emergency hand brake lever, by pulling it back as far as it will go.

TO UNLOCK THE IGNITION

To unlock the ignition, insert the key and turn to the right. (Fig. 2.) The lock barrel will be extruded and thus close the ignition circuit. The key can not be withdrawn until the lock is locked.

Immediately upon receipt of your car, make a record of the ignition key number and also the door lock number and tire lock number. **This is very important, as it will be difficult to replace lost keys without knowing their respective numbers.** In case the record is not made, duplicate keys may be secured by determing the lock numbers which are stencilled on the barrels of the various locks. It is necessary to remove the ignition lock and door lock barrels to obtain the key numbers.

RULES OF THE ROAD

Road and traffic laws vary in different localities and we suggest that these laws and ordinances be learned, by securing a copy from your local authorities.

Economical transportation is not a question of how many miles are covered in a given time, but the number of miles of useful travel that can be obtained at the least cost per mile for fuel, oil, tires and repairs.

MOTOR

The motor used in the Chevrolet Universal model is a six cylinder, four cycle, valve-in-the-head type, having a combination of forced feed and splash oiling system. The motor is suspended in the frame on the cross members at three points. The cylinder firing order is No. 1, No. 5, No. 3, No. 6, No. 2, No. 4.

Although all of the moving parts of the motor are protected from dust and grit by suitable covers, foreign substance may creep inside, if it is not cleaned occasionally. This slight inconvenience will be more than offset by the saving in repair bills at some later date.

ADJUSTING VALVES

To determine proper valve clearance, crank the motor by hand, turning the motor until the valve lifter has reached its lowest position.

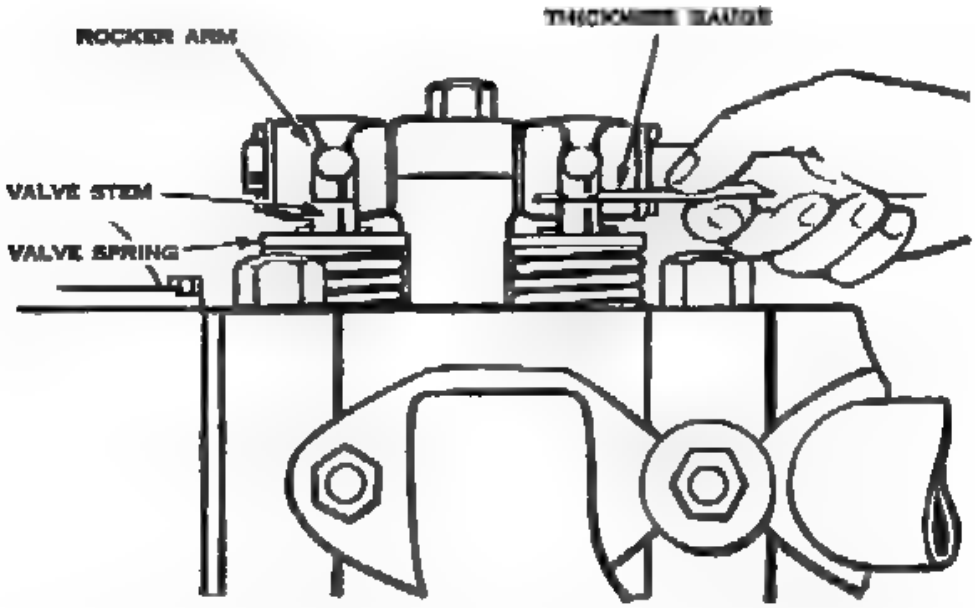


Fig. 3—Adjusting Valves

The space between the rocker arm and the valve stem (Fig. 3) should be about .006″ on the intake valves and about .008″ on the exhaust valves when the valves are seated. The adjustment should be made when the motor is hot, so that the valve stems and push rods will be expanded to the limit. If the space is greater than this, loosen the lock nut on the rocker arm adjusting screw and turn the screw slightly with a screw driver until the proper clearance is obtained; then tighten the lock nut so that the adjustment will

not come loose. Check the clearance after the lock nut is tightened, to make sure that the adjustment is correct.

Caution: The necessity for valve adjustment will show itself first by excessive clicking of valve lifters, and second, by poor running of motor. It is not necessary to make alterations under any other conditions.

MOTOR LUBRICATION

Oil is carried in a reservoir located at the bottom of the crankcase and is filled through a filler tube on the left side of the motor, just back of the generator. (Fig. 4.)

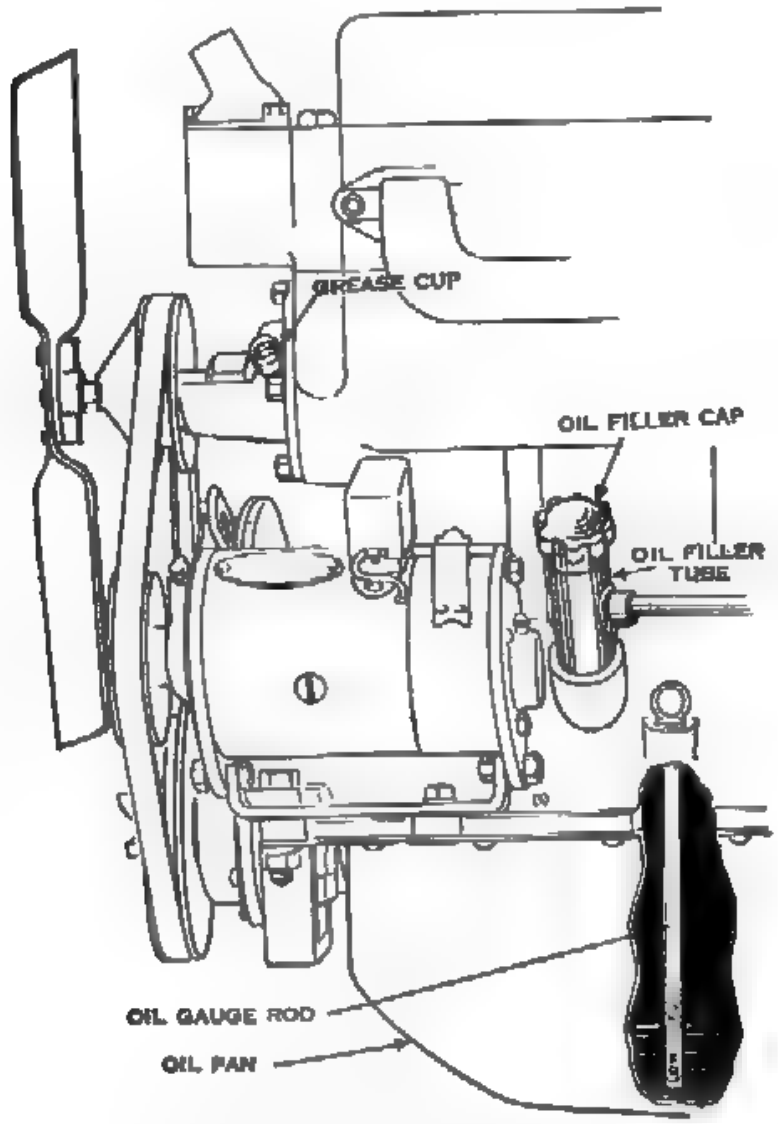


Fig. 4—Oil Gauge and Filler Pipe

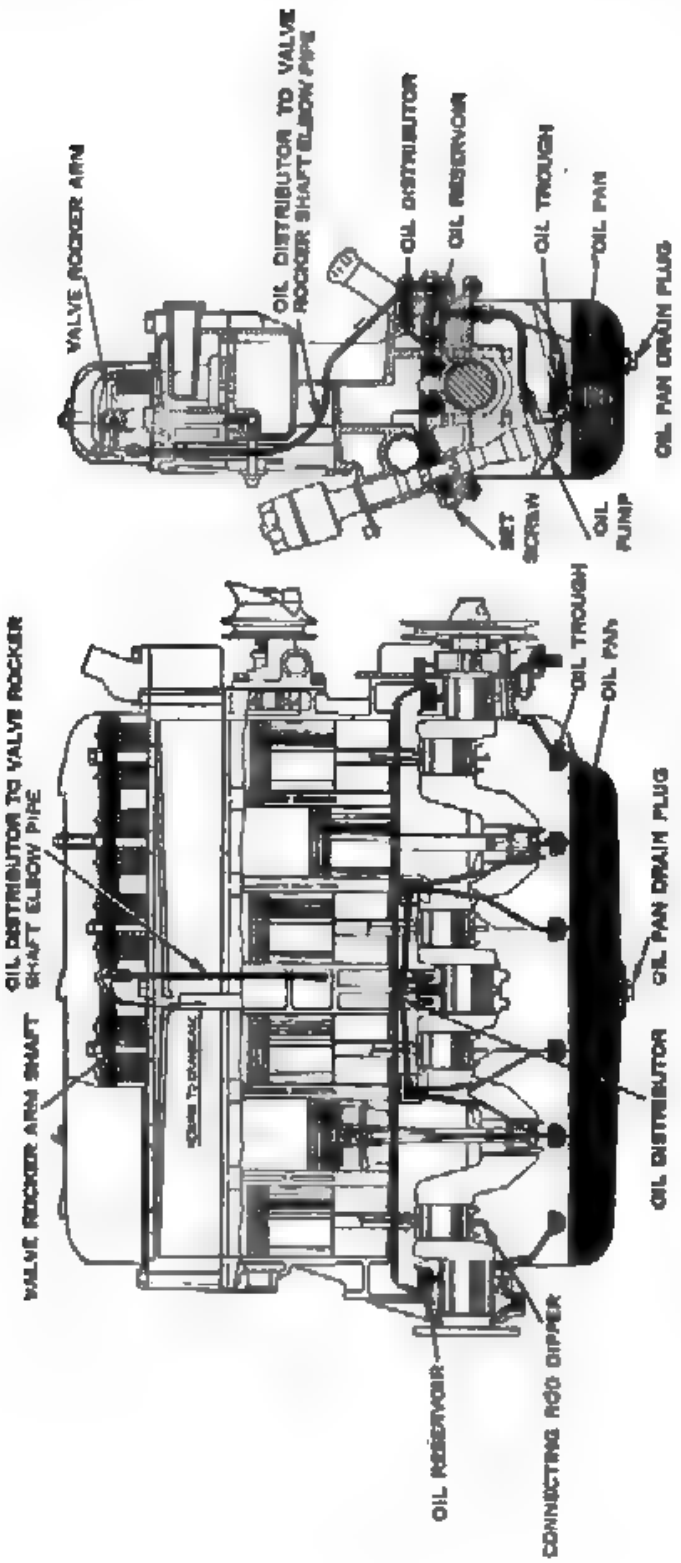


Fig. 5—Motor Oiling System

Fill the oil reservoir to the proper level with the best oil obtainable. Good oil is cheaper than repair bills; therefore, observe this operation regularly and refill when examination proves the necessity. None but the best grades of medium or light oil should be used, as complete lubrication depends upon the oil being thoroughly atomized, so that the oil mist or vapor will reach all working parts of the motor.

CHANGE OIL IN CRANKCASE

A complete change of motor oil is required more frequently in winter than in summer, on account of the necessity of using the choke during the winter months. The excessive use of the choke causes crankcase dilution.

The frequency with which the oil should be changed is also governed by the mechanical condition of the car and on how carefully you, as a driver, handle and care for it.

Fill the oil reservoir by removing the cap on the oil filler pipe on the left side of the motor. Five quarts of good motor oil of proper S. A. E. viscosity are required to refill the pan to the full mark on the oil gauge rod.

See article on General Lubrication page 61 for complete specifications.

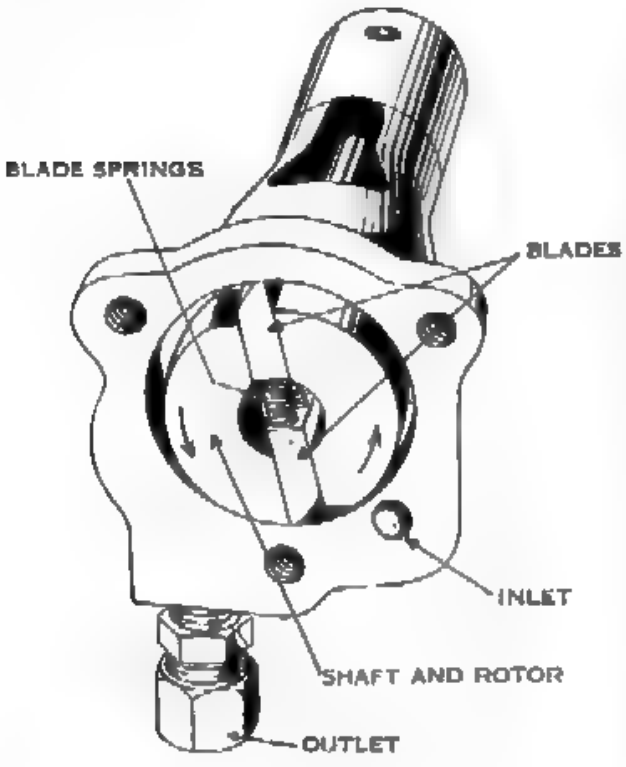


Fig. 6—Oil Pump

OILING SYSTEM

In the Chevrolet oiling system the vane type oil pump, Fig. 6, (driven indirectly by the camshaft), is placed inside the crankcase. It sucks the oil, through a screen, from the oil reservoir to the oil distributor, which is on the outside of the crankcase, where the flow is divided and passes through pipes to the oil troughs located under each connecting rod and oil pockets above the crankshaft bearings.

When the motor is operating, the oil dippers on the ends of the connecting rods lift the oil and a portion of it is forced up into the

connecting rod bearings. The rest is broken up into a fine spray or oil mist, which penetrates to all moving parts of the motor, lubricates them and in turn drains back to the oil reservoir, where it is picked up by the pump and used again.

The oil pump draws the oil through the inlet and the blades push it around until it reaches the outlet, thus keeping a constant pressure in the system when the motor is running.

OIL DISTRIBUTOR

The oil distributor valve, (Fig. 7,) is assembled with a separate valve seat, on which it is held by a spring. Oil coming from the pump is free to rise above the valve assembly into the gauge line and center main bearing, from the high pressure side of the distributor, but before it enters the distributor pipes it must pass through the holes of the valve seat and force the valve off its seat against the spring pressure.

From the low pressure side of the distributor, the oil is delivered to fittings inside the crankcase, from whence it is fed to the pockets above the three crankshaft bearings and the dipper troughs, the camshaft bearings being oiled through drilled holes communicating with the pockets (Fig. 5). The overflow from the pockets returns to the oil pan.

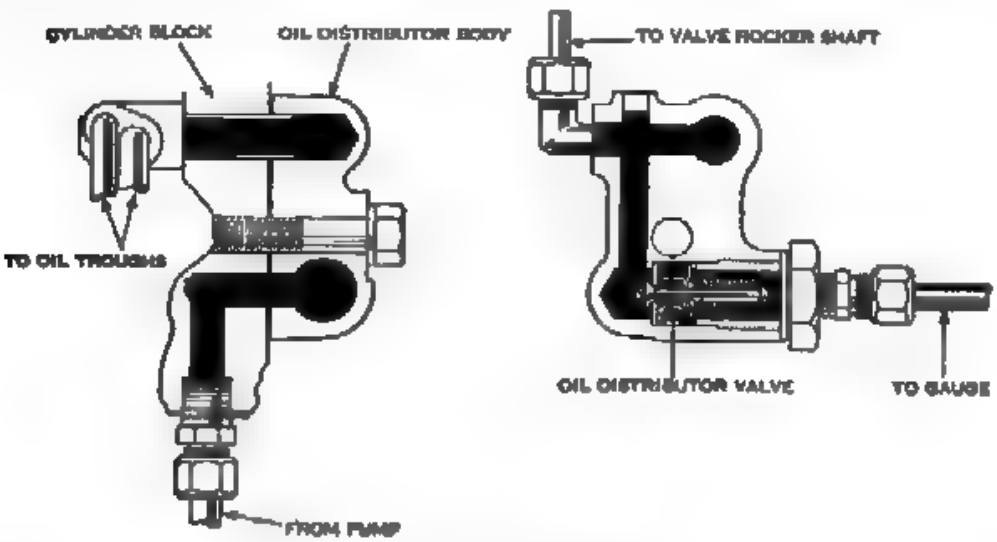


Fig. 7—Oil Distributor

The low pressure side of the oil distributor is connected to the elbow between the hollow valve rocker arm shafts, through which a constant supply of oil is fed to the valve rocker arms. The excess oil from the valve rocker shaft is returned to the crankcase through a telescoping tube.

The pistons, pins and cylinder walls are constantly bathed in oil mist, thus insuring ample lubrication at all times, providing a good supply of oil is maintained.

Should difficulty develop with the oiling system, consult your Chevrolet Dealer or service station immediately.

LUBRICATION OF VALVE LIFTERS (TAPPETS)

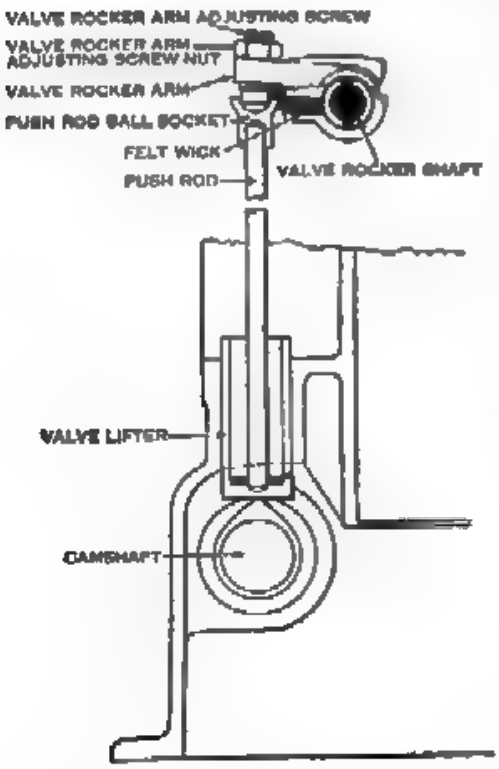


Fig. 8—Lubrication of Valve Lifters

The push rod (Fig. 8) is seated in the center of the open end valve lifter and is emersed in oil which flows down the push rod from the felt oil wick, which keeps the adjusting screw and ball socket covered with a film of oil.

The wick is saturated with the oil which comes from the hollow valve rocker shaft. Excess oil in the bottom of the valve lifter flows back to the oil pan through a small hole drilled in the side wall about ¼" above the bottom.

Valve lifters may be replaced by removing the adjusting screw and lifting the push rod through the hole in the valve rocker arm.

CRANKCASE DILUTION

Another phase of motor oil deterioration, probably the most serious of all, is that of crankcase dilution.

By crankcase dilution, we mean a thinning of the oil on account of certain portions of the gasoline or fuel leaking by the piston and rings and mixing with the oil. This condition will be encountered in all classes of cars and motors, regardless of make or model. It is always present in a greater or less degree and must be combated continually.

Careful attention to a few comparatively simple precautions will minimize it and avert real damage.

The causes of crankcase dilution in most cases can be traced directly to the character of the fuel used. Practically all motor fuels today contain portions which are slow burning and hard to ignite. The thinning of the motor oil is due to unburned fuel vapor which forces or works its way past the pistons and rings and in coming in contact with the cool walls in the crankcase, condenses and is mixed with the oil, thus reducing the "body" of the oil and impairing its lubricating qualities.

All motor oils are subject to this dilution.

MECHANICAL CAUSES OF DILUTION

Dilution may be caused by such faults, mechanically, as scored cylinders, poor ring fit, "sloppy" or loose pistons and faulty valves.

Poor ignition, due to any of the following conditions, will also increase dilution: dead or fouled spark plugs, incorrect timing, faulty coil, distributor, weak spark or leaky gaskets.

Common causes of incomplete combustion of the fuel are: over-rich mixture (caused by faulty carburetor adjustment); restricted air intake to carburetor; wrong jet or nozzle in carburetor; or air leaks.

WATER IN CRANKCASE

Serious lubrication troubles may result in cold weather by an accumulation of water in the oil reservoir. This condition is as a rule little understood by the car owner. To demonstrate the chief cause of water in the oil reservoir, hold a piece of cold metal near the end of the exhaust pipe of the motor and note the rapid condensation and collection of drops of water on it. The exhaust gases are charged with water vapor and the moment these gases strike a cold surface, will condense, forming drops of water.

On account of a certain amount of these gases passing the pistons and rings, even under the most favorable conditions, we will have the formation of water in the oil reservoir, in a greater or less degree, until the motor becomes warm. When the motor becomes thoroughly warm, the crankcase will no longer act as a condenser and all of these gases will pass out through the oil separator (Fig. 9).

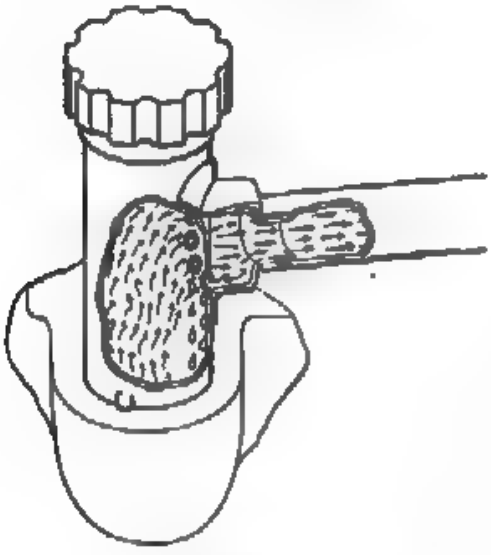


Fig. 9—Oil Separator

Short runs in cold weather, such as city driving, will aggravate this condition.

OIL SEPARATOR

The oil separator (Fig. 9), is just what the name implies.

Suction created by the action of the engine through the carburetor draws the fumes from the crankcase through holes in the breather tube and the fumes pass through the carburetor and are burned in the combustion chamber, while the oil drips back into the crankcase.

CORROSION

Practically all present-day motor fuel contains small amounts of sulphur which, in the state in which it is found, are harmless; but this sulphur on burning, forms certain gases, a small portion of which is likely to leak past the pistons and rings and re-acting with water, when present in the crankcase, form very corrosive acids. The more sulphur in the fuel, the greater the danger from this type of corrosion. This is a condition which we cannot wholly avoid, but it may be reduced to a minimum by proper care of the motor.

As long as the gases and the internal walls of the crankcase are hot enough to keep water vapor from condensing, no harm will result; but when a motor is run in low temperatures, moisture will collect and unite with the gases formed by combustion; thus, acid will be formed and is likely to cause serious etching or pitting. This etching, pitting or corrosion, when using fuel containing considerable sulphur, manifests itself in excessively rapid wear on piston pins, camshaft bearings and other moving parts of the motor, oftentimes causing the owner to blame the car manufacturer or the lubricating oil when in reality, the trouble may be traced back to the character of present-day fuel or a condition of the motor, such as excessive blow-bys or faulty carburetor adjustment.

PRECAUTIONS TO PREVENT DILUTION AND CORROSION

1 Use good fuel and cover radiator in winter.

2—Use none but the very best grades of oil.

3—Drain the crankcase frequently and flush out with a light washing oil.

(Never use gasoline or kerosene to flush out the crankcase.)

Refill with a good grade of oil.

4—Use the choke sparingly.

5—Do not idle the motor unnecessarily.

6 Keep piston and ring fits up to standard, thus preventing blow-bys.

7—Keep valves ground and properly adjusted.

8—Be sure cylinder head gaskets and intake manifold gaskets do not leak.

9—Take your car to the Chevrolet Dealer for regular periodic inspection.

10—Test condition of oil, by withdrawing the oil gauge rod (Fig. 4).

WEAK VALVE SPRINGS

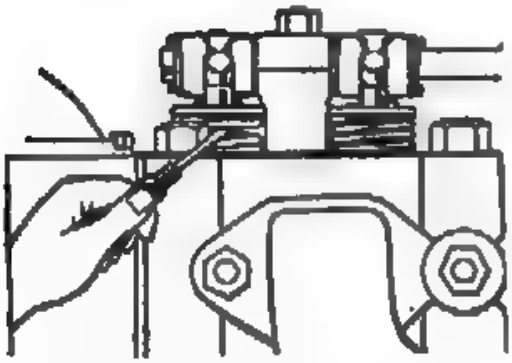


Fig. 10—Weak Valve Springs

As the valve springs are subjected to considerable heat, it follows that in time their "temper" will be affected.

By inserting a screw driver or other suitable tool between the coils of the exhaust valve spring (Fig. 10) and turning it (while the motor is running) the tension of the spring can be increased. If the motor picks up and runs properly, replace the spring.

POSSIBLE MOTOR TROUBLE

Cause I Failure to Start.

Remedy

(1) Ignition not turned on.
(2) Gasoline supply exhausted.
(3) Carburetor or fuel pump filter screen clogged.
(4) Choke button not pulled out far enough.
(5) Storage battery may be partially discharged and unable to supply enough current for both starting and ignition.
(6) Ignition coil on dash burned out.
(7) Distributor contact points badly burned or pitted, causing them to remain open.
(8) Spark plugs fouled.

Cause II Motor Misses

Remedy

(1) Insufficient supply of gasoline flowing to carburetor, on account of clogged line or dirty screen.
(2) Valve sticking.
(3) Loose electrical connections.
(4) Spark plug gaps incorrect—($\frac{1}{32}$" correct).
(5) Spark plug porcelain broken.
(6) Valve spring weak or broken.
(7) Valves adjusted too close.
(8) Carburetor needle valve sticking.
(9) Carburetor needs adjusting.

Cause III Motor Stops Suddenly.

Remedy

(1) Gasoline exhausted.
(2) Gasoline line clogged or needle valve sticking
(3) Ignition wires loose.

Cause IV Motor Gets Hot.

Remedy (1) Oil circulation stopped or lines clogged.

(2) Low water supply in cooling system.

(3) Radiator clogged with lime deposit.

(4) Fan belt loose.

(5) Late or retarded spark.

CLUTCH

The clutch used on the Chevrolet car is a standard single plate clutch. The driving disc is engaged by two clutch friction rings riveted on either side of the driving disc.

The clutch pressure is maintained by eight coil springs evenly spaced around the area of the disc. There is only one adjustment necessary on the clutch and that is to keep the clutch pedal in its proper position, so that it does not touch the floor board at any time.

Refer to Fig. 11 and note clutch pedal adjusting bolt and nut.

If, at any time, the clutch pedal is less than ½" away from the end of the slot in the floor board, when the clutch is fully engaged, the clutch pedal adjusting bolt nut should be turned to the right until the proper clearance is obtained.

CARE OF CLUTCH

Do not lubricate the clutch.

The clutch is designed so that the clutch throwout collar and pilot bearing are both self lubricating and no oil or grease need be applied at these points; also care should be exercised to keep oil and grease away from the clutch disc and clutch friction rings.

It is well, with the first indication of any difficulty with the clutch, to consult the nearest Chevrolet Dealer or Service Station.

Do not disengage the clutch when starting the motor.

TRANSMISSION

The transmission is of the selective type, having three speeds forward and one reverse.

The fundamental requirement is to first engage the gears so that the entire tooth "face" of the sliding gears mesh with those on the countershaft and, second, to properly lubricate all working parts. Proper engagement can be had by being sure when shifting gears that the gear shift lever travels as far forward or backward as it will go, before re-engaging the clutch.

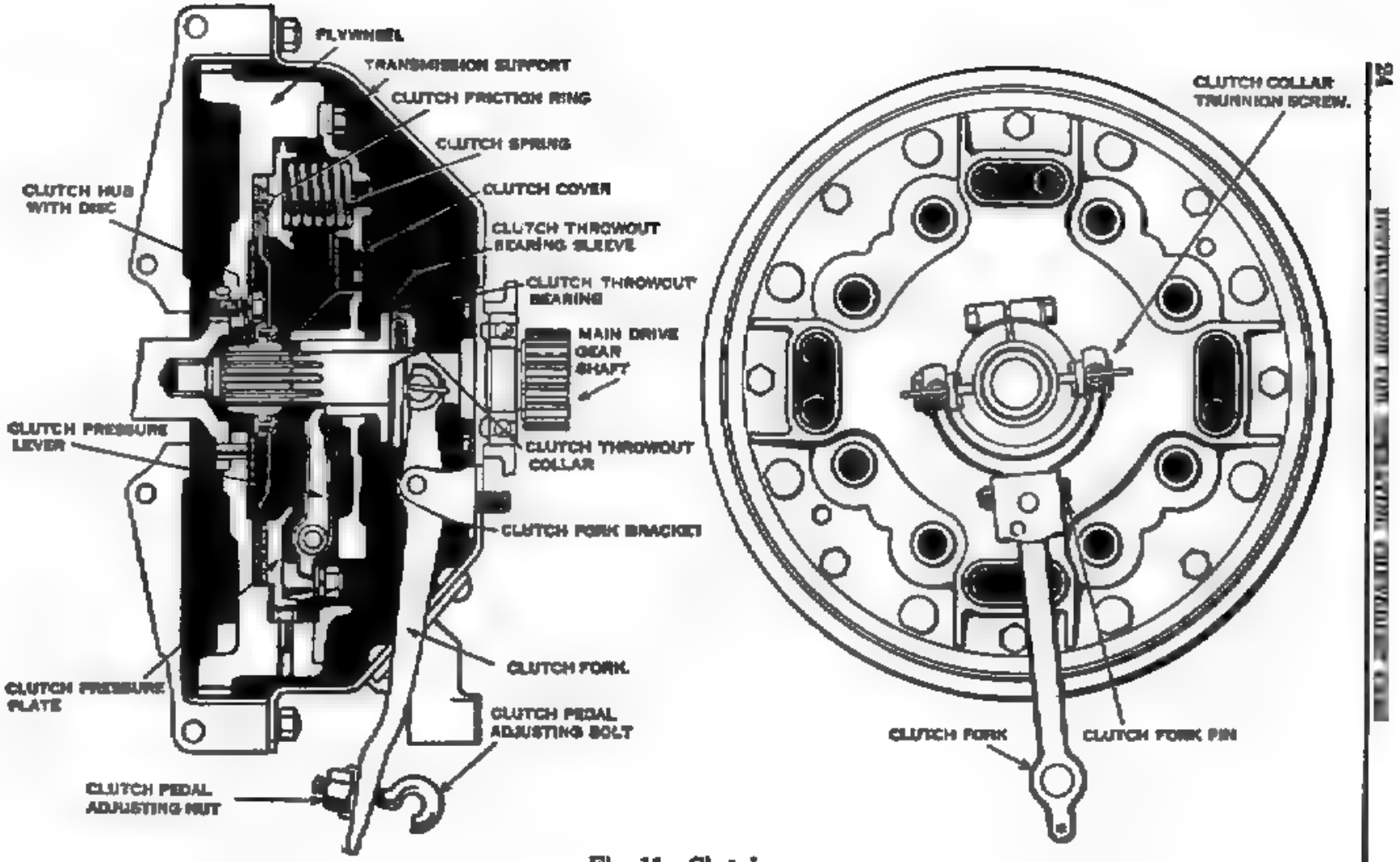


Fig. 11—Clutch

LUBRICATION OF TRANSMISSION

To lubricate the transmission, fill every 1,000 miles with a heavy oil such as 600W, not grease, so that the oil level stands even with the opening in the filler boss on the right side of the case. In cold weather we recommend the addition of a pint of light engine oil to the heavy oil in the transmission, which improves the lubricating qualities and makes it easier to shift gears and start the motor.

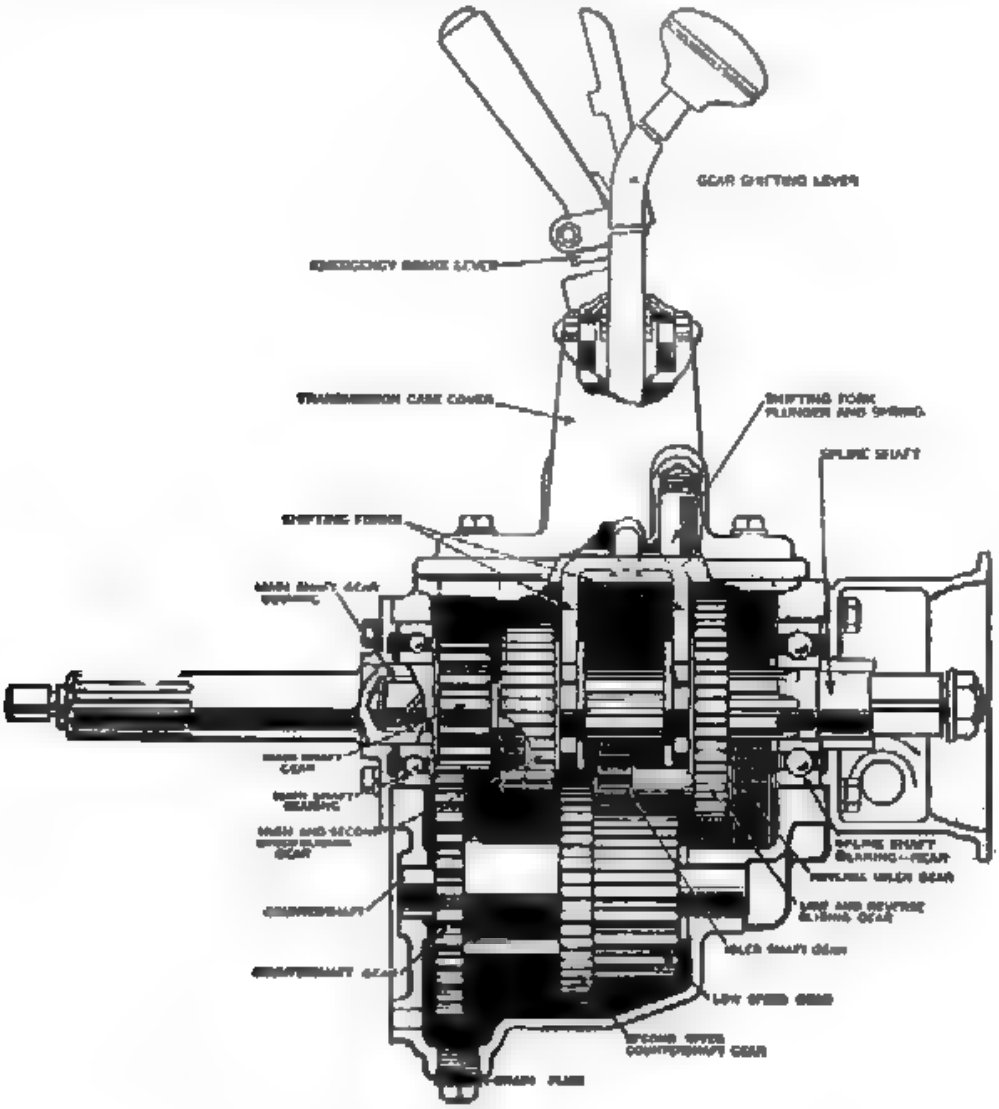


Fig. 12—Transmission

Once every 2,000 miles it is a good plan to wash out the transmission with a light oil, to remove any chips of metal knocked off the gears, or other foreign substances, such as grit or dirt. To do this, remove the drain plug at the bottom of the transmission case and allow the oil to drain off, after which flush out the case thoroughly and refill with a heavy oil, such as specified in Fig. 44.

UNIVERSAL JOINT

Fig. 13 illustrates the universal joint used in the Chevrolet. It is directly connected to and receives its lubrication from the transmission. Additional lubrication facilities at this point are unnecessary. The speedometer is driven from a worm and drive gear mounted on the universal joint. Consult your Chevrolet Dealer for replacement parts which become necessary on account of wear.

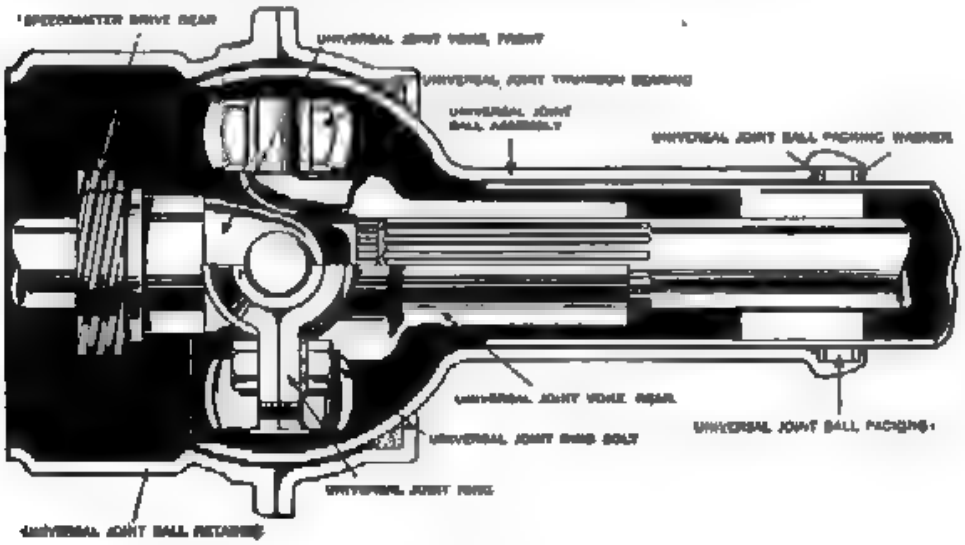


Fig. 13—Universal Joint

SHOCK ABSORBERS

This car is equipped with Delco-Lovejoy shock absorbers, which have been adjusted at the factory, to meet all ordinary driving conditions.

This is a single acting hydraulic shock absorber which dissipates the energy of the car springs in excess of that necessary to return them to their normal position, after they have been compressed. The resistance of the absorber is controlled by the piston forcing oil through a valve. The oil used is a special low viscosity oil that will retain its fluid characteristics as low as 40 degrees below zero F. The same oil is used both summer and winter and will have similar operating characteristics the year around, and is carried by all Chevrolet Dealers and service stations.

FRONT AXLE

The front axle is so simple in construction that there is little which can be said concerning it, except that it has a very heavy drop forged "I" beam and the steering knuckles are held to the axle "I" beam by large king pins; also, each front wheel is mounted on two New Departure bearings. Fig. 16 illustrates this sturdy but simple construction.

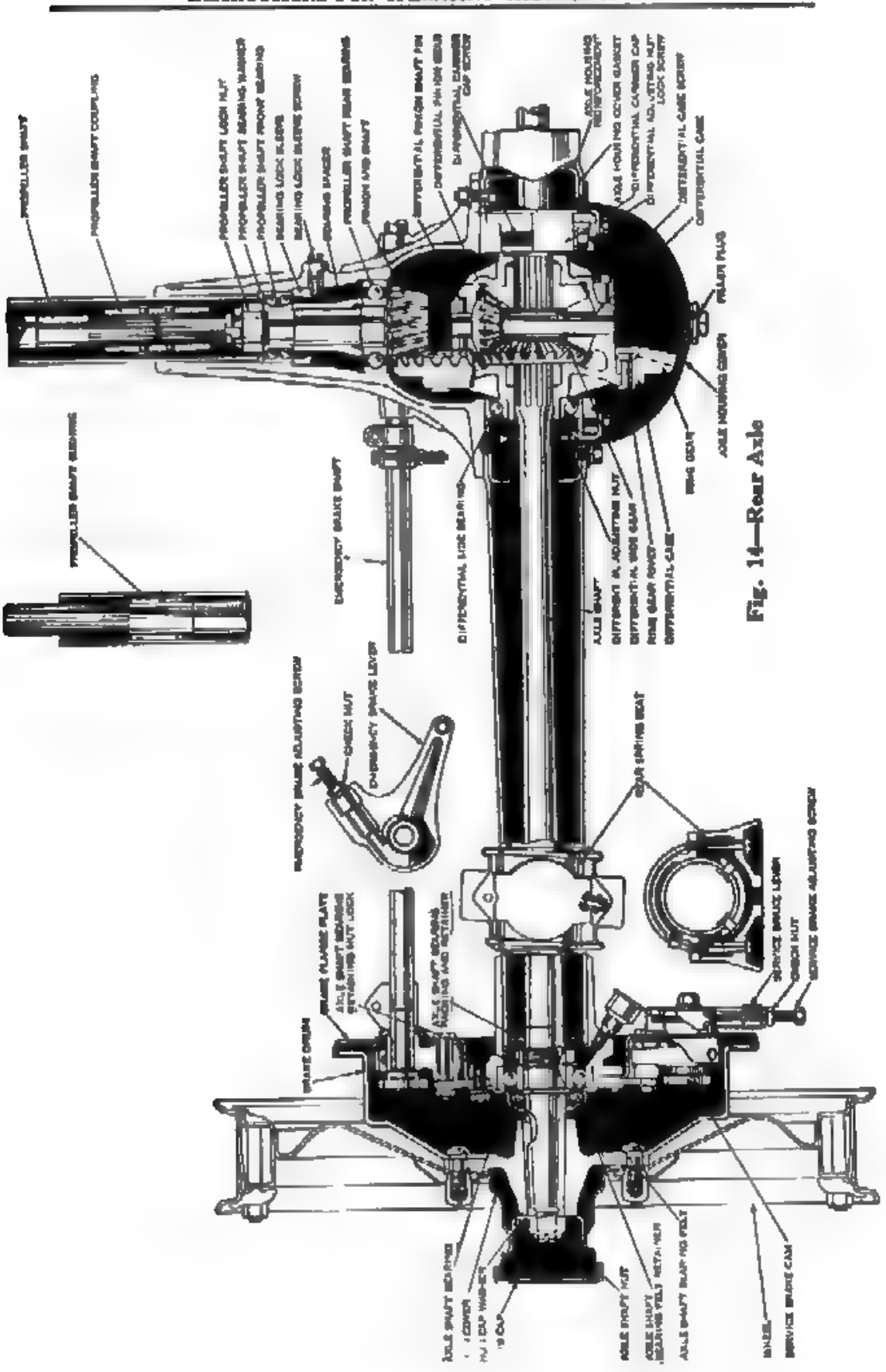


Fig. 14—Rear Axle

Cause IV Motor Gets Hot.

Remedy (1) Oil circulation stopped or lines clogged.

(2) Low water supply in cooling system.

(3) Radiator clogged with lime deposit.

(4) Fan belt loose.

(5) Late or retarded spark.

CLUTCH

The clutch used on the Chevrolet car is a standard single plate clutch. The driving disc is engaged by two clutch friction rings riveted on either side of the driving disc.

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CARE OF CLUTCH

Do not lubricate the clutch.

The clutch is designed so that the clutch throwout collar and pilot bearing are both self lubricating and no oil or grease need be applied at these points; also care should be exercised to keep oil and grease away from the clutch disc and clutch friction rings.

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TRANSMISSION

The transmission is of the selective type, having three speeds forward and one reverse.

The fundamental requirement is to first engage the gears so that the entire tooth "face" of the sliding gears mesh with those on the countershaft and, second, to properly lubricate all working parts. Proper engagement can be had by being sure when shifting gears that the gear shift lever travels as far forward or backward as it will go, before re-engaging the clutch.

the rear wheels, connected to the hand brake lever by a series of brake linkage which act both as an equalizing and proportioning medium.

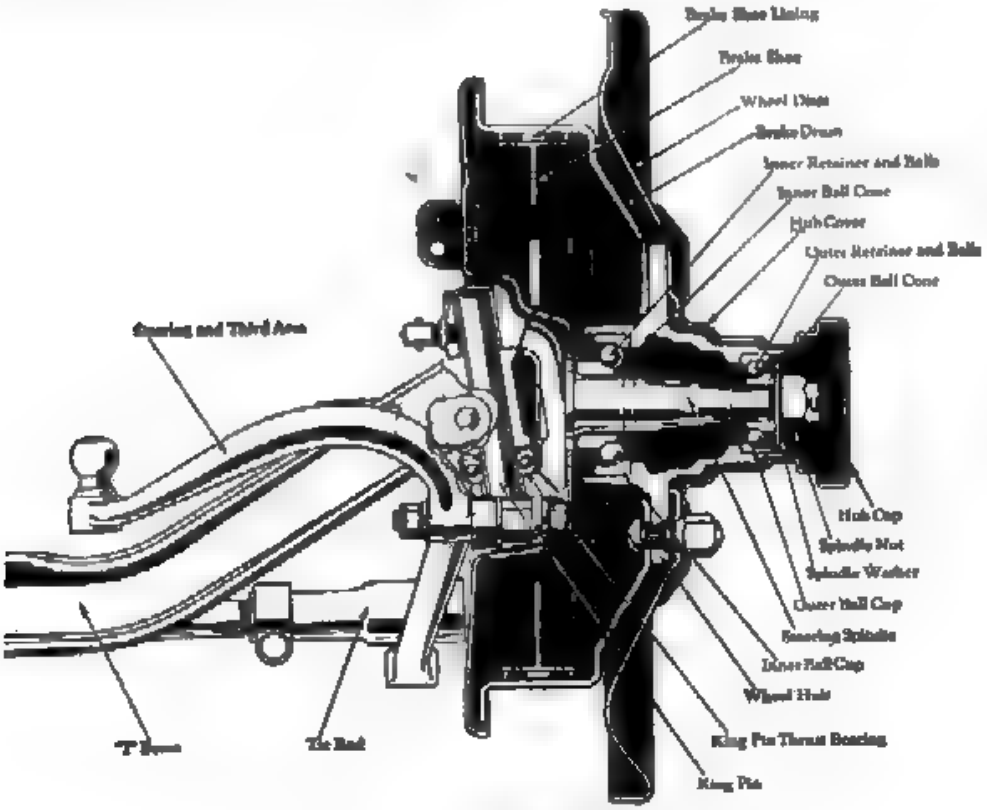


Fig. 16— Adjusting Front Wheel Brakes

These brakes have been designed and developed to give consistant and efficient service with long life under all conditions and in order to keep them so, it is advisable that you follow these suggestions:

1st—Avoid sudden stopping unless necessary, as this puts unnecessary severe strain on the car.

2nd—Do not delay adjusting brakes too long since they are so simple and easy to adjust.

3rd—Keep the clevis pins in the brake linkage, oiled.

4th—Do not try to get the last mile out of the life of the brake linings.

5th—A skillful driver never de-clutches his motor until the last moment as the compression, of the motor, on closed throttle materially helps to slow down and stabilize the car when stopping.

6th Do not reline brakes with a lining other than the Genuine Chevrolet Lining, sold by all Chevrolet Dealers, as this has been especially developed for this particular brake.

For all normal adjustments, it is only necessary to adjust the brake shoes to compensate for wear. After 5,000 to 10,000 miles, according to the service that the brakes have been subjected to, it is desirable to re-centralize the cams which operate the brake shoes. The need for this is first noticed when the brakes are applied and they feel ineffective.

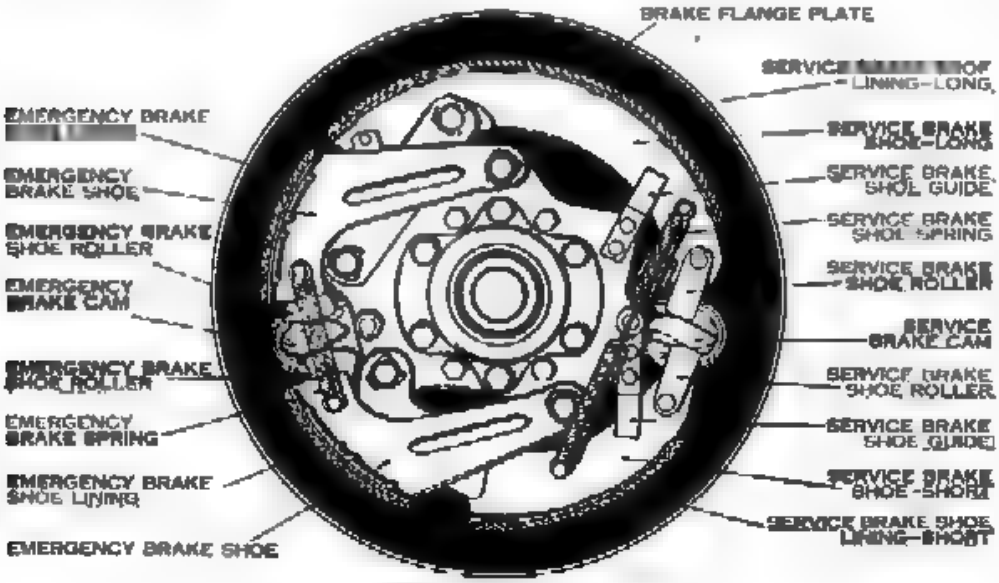


Fig. 17—Brake Shoe Adjustment

RE-CENTRALIZING SERVICE BRAKES

1—Adjust front wheel bearings to proper tension by tightening or loosening the steering spindle nut. CAUTION: Be sure that both wheels are cotter-pinned securely.

2 Loosen all centralizer clamp bolts, making sure that the centralizer is free to move by tapping lightly with a hammer.

3—Give the brake pedal a moderate push and clamp up the centralizer bolts with pressure still on the pedal.

ADJUSTING SERVICE BRAKES

1—Jack up all four wheels.

2 Loosen check nuts on the brake cam operating levers and turn the adjusting screws to the right until the brake shoes drag very lightly on the drums, then tighten the check nuts.

3—Try brakes for left and right braking power, slacking off on the side which pulls the harder, until all brakes are equal.

RE-CENTRALIZING EMERGENCY BRAKES

1—Loosen both centralizer bolts making sure that the centralizers are free to move by tapping lightly with a hammer.

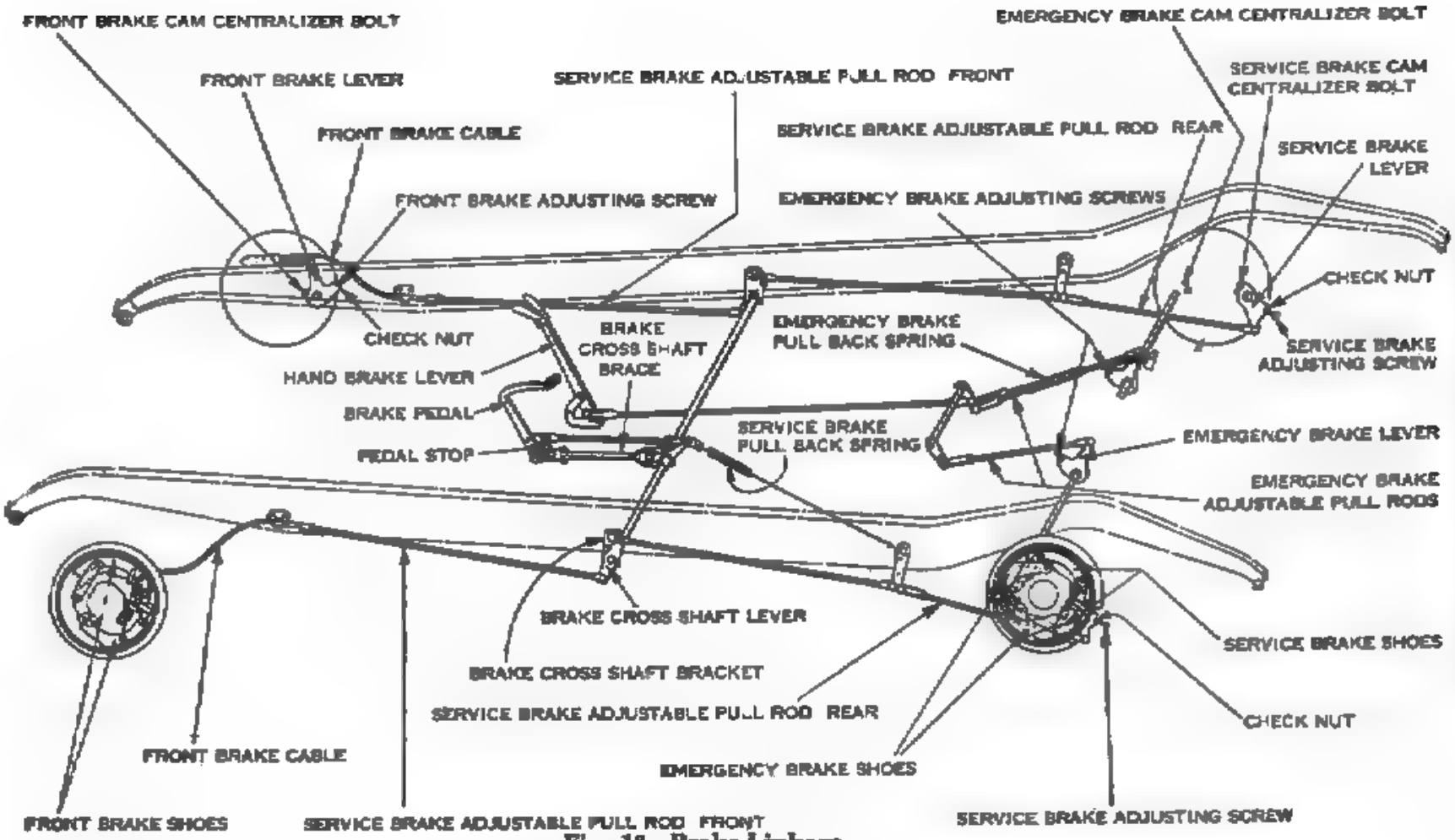


Fig. 18—Brake Linkage

2—Pull back on the hand brake lever with moderate pressure and with the hand brake lever set in this position, tighten the centraliser bolts.

ADJUSTING EMERGENCY BRAKES

1—Jack up both rear wheels.

2—Loosen check nuts on the brake cam operating levers and turn the adjusting screws to the right until the shoes drag very lightly on the drums, then tighten the check nuts.

3—Try the brakes for equal braking power, slacking off on the brake which pulls the harder until both brakes are equal.

MAKING AN EMERGENCY STOP

There are times when the ability to bring the car to a stop quickly is of the greatest importance. When this occurs, release the clutch and at the same time PRESS DOWN HARD on the service brake pedal. If this braking action is not sufficient to bring the car to a stop in the required time, "set" the hand brake by pulling the emergency brake lever (Fig. 2) toward you, as far as it will go. By applying both the service and the hand brakes you apply the braking effect on the inner surface of the brake drum, which will have immediate results.

Examine the brakes frequently and if, after considerable use, you find that practically all of the available space for adjusting has been used, new brake linings should be installed. Do not neglect your brakes.

See your Chevrolet Dealer for brake adjustments and linings.

FRONT WHEEL LUBRICATION

The front wheels run on New Departure ball bearings which are lubricated (Fig. 19), by packing the bearings with soft cup grease. In mounting the front wheels, be careful to thoroughly pack the bearing assembly with grease. The best lubricant for front wheel bearings is a straight mineral grease entirely free from asbestos fibre or other foreign matter.

CAUTION: Do not over-lubricate front wheel bearings, as over-lubrication will cause an accumulation of grease between the brake drums and the front brake shoes which will result in slipping brakes.

By cramping the front wheels, as indicated in (Fig. 19), the two Alemite fittings are accessible for easy lubrication with an Alemite

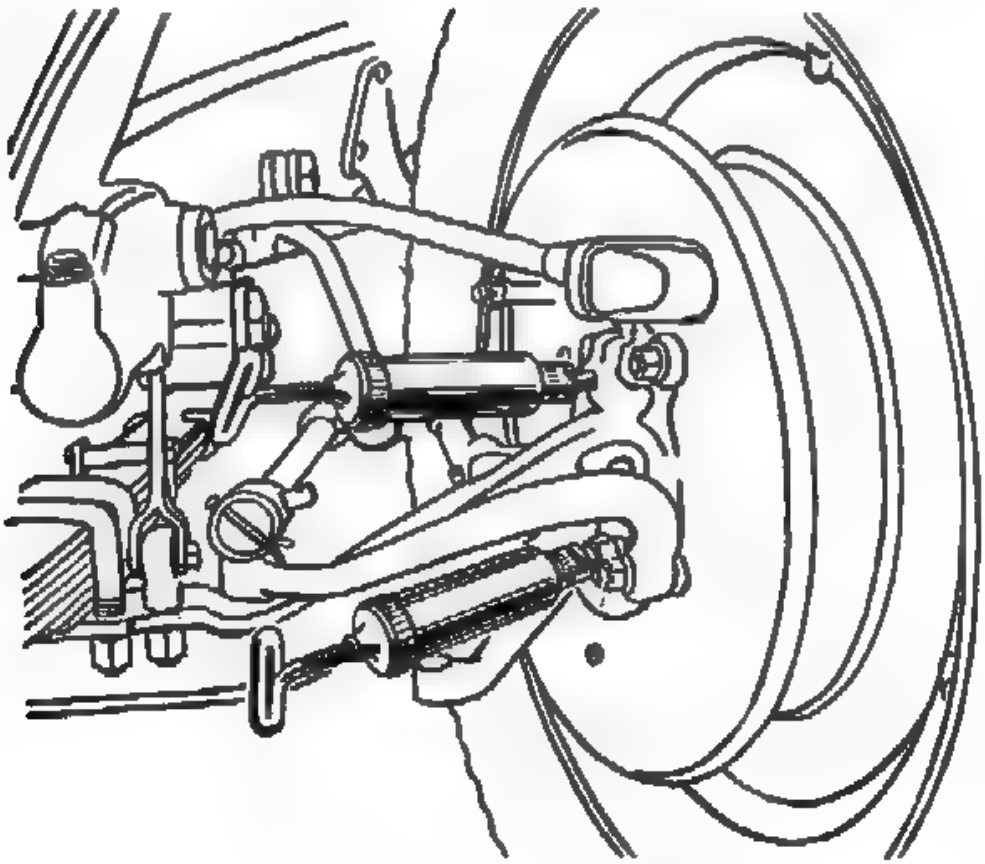


Fig. 19—Front Wheel Lubrication

Gun, from the front of the car. After lubricating the steering knuckle on one side of the car, cramp the wheels in the opposite direction and repeat the oiling operation at the two Alemite fittings on the opposite side.

The lubrication of the king pins should not be overlooked; they should be lubricated every 500 miles. Use a high grade heavy oil with a consistency of 600W. Do not use oil having graphite or other substances of this nature in it.

FRONT WHEEL ALIGNMENT

To make steering easy, it is required that the front wheels should "toe" in; that is, the distance between the inside faces of the wheel felloes, measured at the height of the wheel hubs, should be from 0 to ⅛ inch more at the rear than at the front. This causes the wheels to grip the road better and allows the car to hold its course without undue action on the steering mechanism.

By referring to Fig. 20, the distance indicated by line B—i. e., between the inner sides of the wheel felloe at the rear of the front wheels—should be from 0 to ⅛ inch greater than the distance indicated by line A.

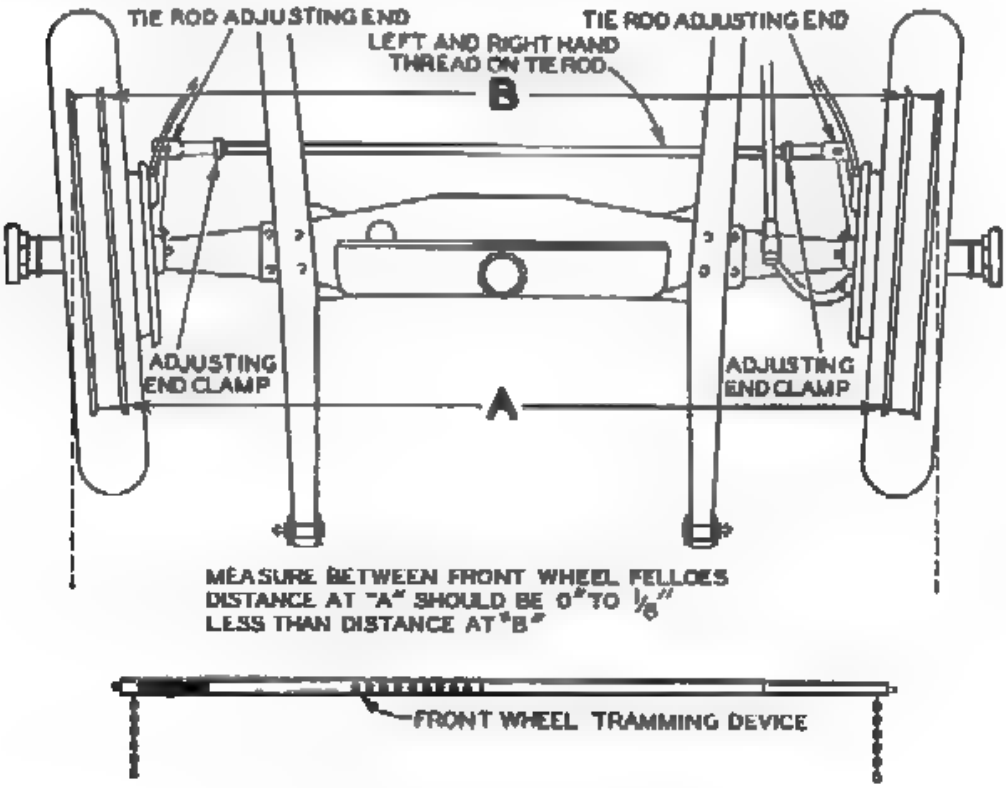


Fig. 20—Front Wheel Alignment

The best method of checking these measurements is by use of a front wheel tramming device, Fig. 20. Almost any good repair shop or tire station is equipped with one of these devices and will check the alignment of the wheels for you.

If it is found that the front wheels do not have the proper "toe in"—i.e., from 0 to ⅛ inch—loosen the adjusting clamp screw at both ends of tie rod (Fig. 20) and, with a small pipe wrench or pair of pliers, turn the tie rod to the right to shorten. To increase the distance indicated in Fig. 20 by line B, turn the tie rod to the left.

Turning the tie rod to the right will increase the distance shown by line A and turning the tie rod to the left will decrease the distance indicated by line A in Fig. 20.

After proper adjustment has been secured, be absolutely certain to fasten both adjusting clamp screws firmly, as failure to do so may result in a serious accident to the car or occupants.

The tie rod ends are equipped with Alemite fittings for lubrication and it is most important that the instructions given on the Lubrication Chart (Fig. 44), be followed.

STEERING GEAR ASSEMBLY

Steering is not a difficult task. Perfection comes from confidence, as well as from knowledge. Within a short time the novice will have learned just how much of a movement on the steering wheel is required to turn a corner and pass other vehicles or obstructions.

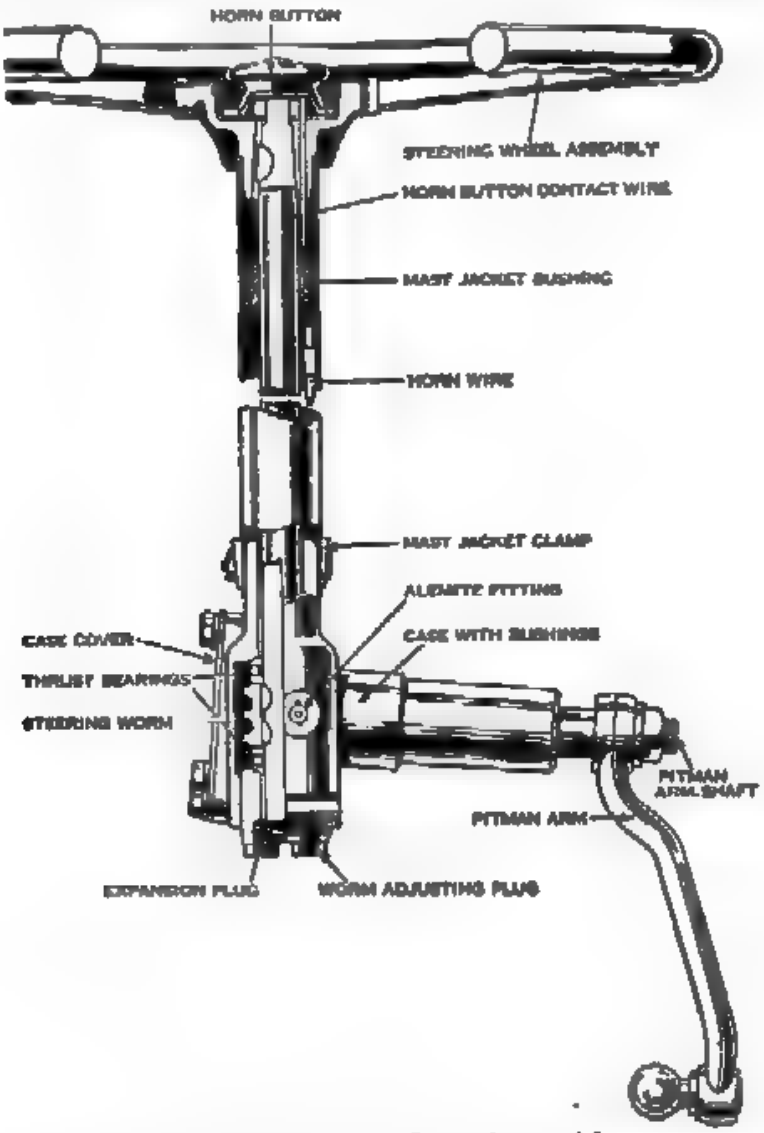


Fig. 21—Steering Gear Assembly

The steering mechanism used on Chevrolet cars has been designed to give the greatest ease of handling with the least amount of wear and consequent adjustment. The ball thrust bearings above and below the steering worm insure quietness and easy steering.

Go over all the connections regularly and tighten any bolts or nuts which are loose, supplying the grease and oil where needed, as this is the only safe insurance against a costly accident. At the first sign of excessive wear or looseness, consult the Chevrolet Dealer.

STEERING CONNECTING ROD

Fig. 22 illustrates the steering connecting rod which connects the pitman arm on the steering gear to the steering and third arm at the steering knuckle.

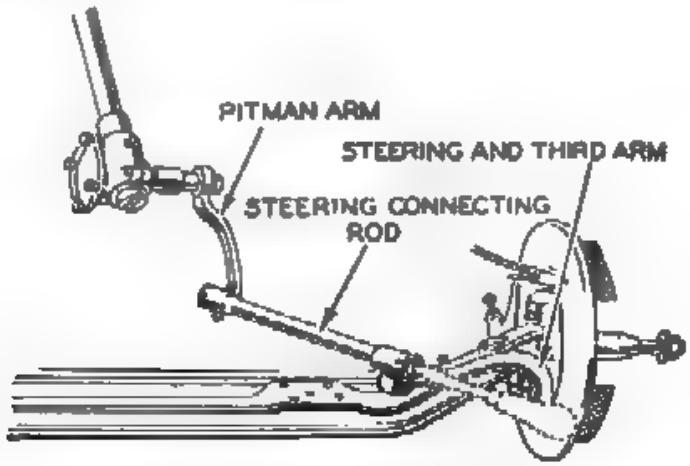


Fig. 22—Steering Connecting Rod

Wear will necessitate adjustment, which may be performed by the use of a screw driver, as illustrated. After the proper adjustment has been secured, be absolutely sure to insert the cotter pins (which prevent the plugs from loosening) and spread the cotter pin ends so they will not come out.

The steering connecting rod should be lubricated by the Alemite fittings, as specified in the Lubrication Chart (Fig. 44).

FUEL SYSTEM, INCLUDING GASOLINE TANK, CARBURETOR, CHOKE FUEL PUMP AND AIR CLEANER

Gasoline sold at most filling stations is filtered. It is a good plan when filling the tank from any other source to strain the gasoline before placing it in the tank, in order to remove any sediment which might otherwise clog the filter screen in the fuel pump.

In order that the gasoline will flow properly to the carburetor, there is a small hole in the top of the filler cap on the tank, so that air can enter as the quantity of gasoline in the tank is decreased. It is essential that this hole be kept open.

Fig. 23 illustrates the fuel system and its connections, as they are mounted on the chassis. The main gasoline tank at the rear has a capacity of 11 gallons and the fuel is pumped from it to the carburetor by the fuel pump, which maintains a constant supply, as varying speeds demand.

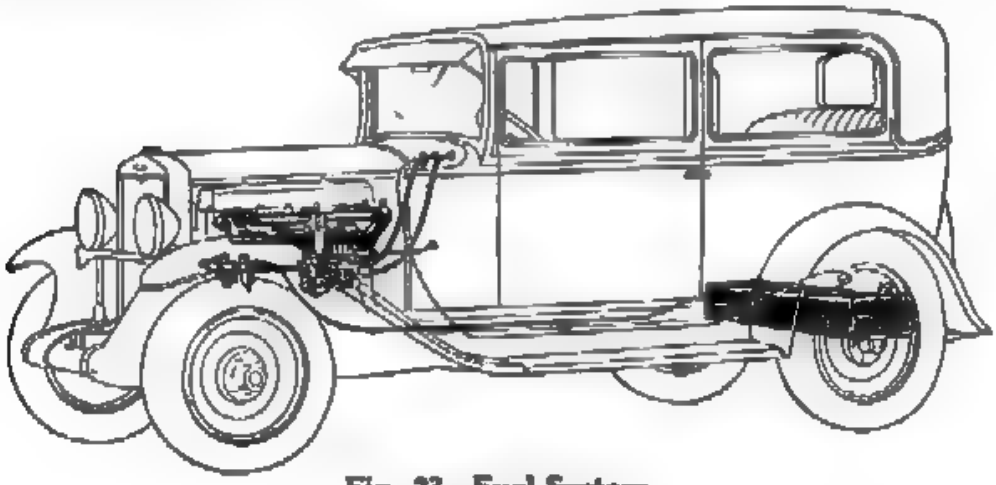


Fig. 23—Fuel System

CARBURETOR

The carburetor has been especially designed for the 1930 Chevrolet car and embodies new features which make it outstanding in recent carburetor development.

In working out this design, every phase of motoring has been given minutest attention. Quick to start in any kind of weather, sure and steady running after starting, even when motor is cold, maximum speed and power at open throttle, a ready response to accelerator when you step on it and a most economical mixture at part throttle throughout the usual driving speeds are insured by this new type instrument.

A distinct and unique feature which is found in this carburetor is the venturi choke (Fig. 24).

The venturi choke secures high velocity at carburetor nozzle when choked and has the following advantages:

1—Extreme ease of starting, which effects a great saving to the battery.

2—Keeps motor running steadily after starting.

3—Reduces crankcase dilution.

The starting mixture is controlled by a single button on instrument panel, marked "Choke." Pulling this button out automatically closes the air passage through the venturi. Air is then metered into carburetor well and standpipe and, co-mingling with the gasoline, forms a spray of atomized fuel which is readily drawn into the cylinders and ignited. As this system of starting greatly reduces the amount of

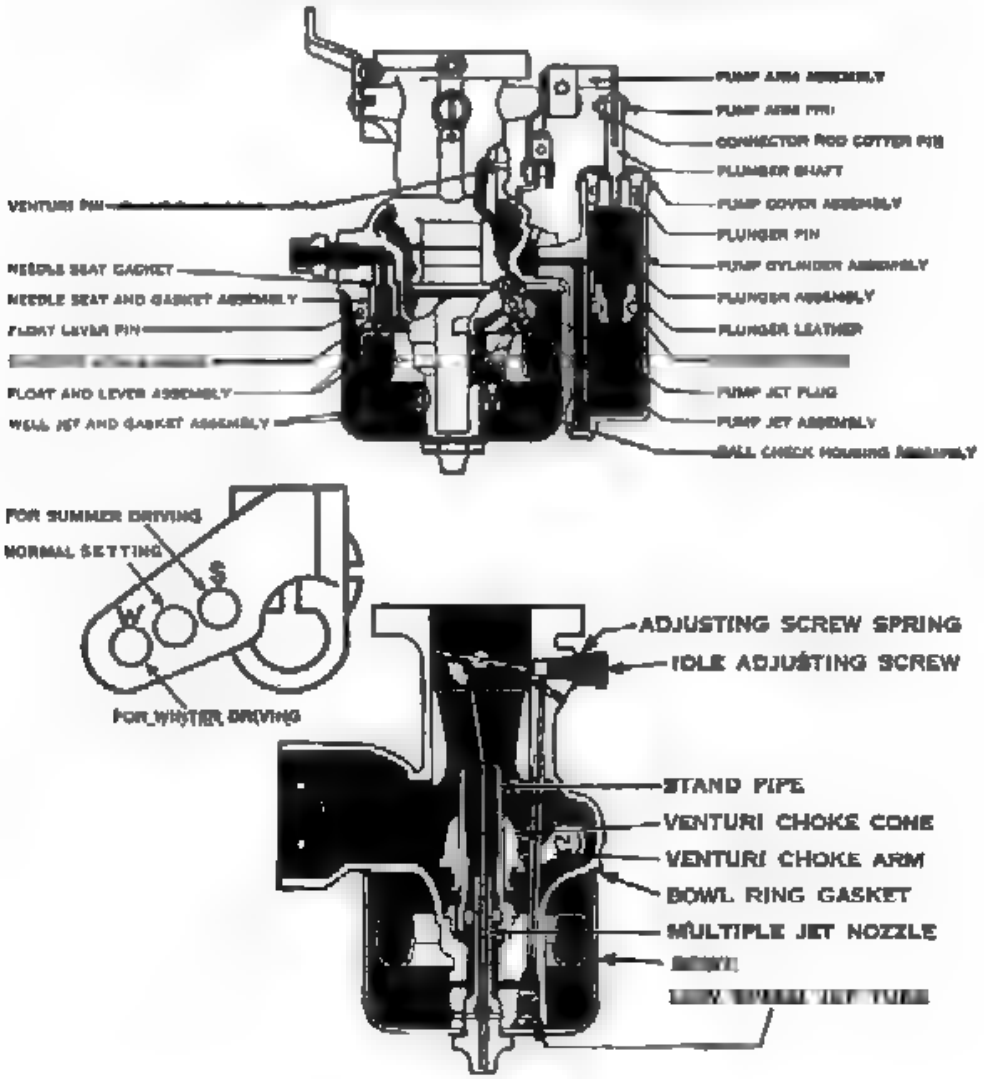


Fig. 24—Carburetor

liquid gasoline entering the cylinder, smoother motor operation is insured and crankcase dilution reduced to a minimum.

A delayed action accelerating pump (Fig. 24), has been added to regular carburetor accelerating well. This pump supplies additional fuel for acceleration. Gasoline is drawn from bowl chamber and discharged into the venturi when the throttle is opened.

A fuel metering rod, attached to the throttle valve, passes through the vertical jet and regulates the amount of fuel supplied by this jet, according to the position of the throttle. This permits the carburetor to give the greatest possible mileage at part throttle positions or at speeds at which the car is normally driven and to deliver maximum power when the throttle is wide open, by automatically supplying a richer mixture.

There is but one simple adjustment for idle speed, which regulates the supply of fuel up to approximately 18 miles per hour. The

simplicity of adjustment enables mechanics to secure uniformly good performance and the incorporated features of the venturi choke and pump are constructed to give maximum performance at all times.

Another outstanding feature of this carburetor is its simplicity of design and the serviceability of its parts. Any part may be removed without disturbing any other part or affecting the carburetor adjustment. When the bowl is removed, the idling tube, nozzle, float, gasoline intake needle and needle seat are accessible and easily removed for cleaning and examination.

CARE OF CARBURETOR

Dirt may sometimes get into the jets and cause the motor to run unevenly or to spit and backfire. This dirt may often be drawn through the jets by closing the choke and opening the throttle wide when the car is running 25 or 30 miles per hour. Hold the choke closed about two seconds, then open the choke; also, open and close the throttle until the motor fires evenly. If the dirt cannot be removed in this way, the carburetor should be taken apart by some competent mechanic and thoroughly cleaned.

If it should become necessary to remove the jets, make certain that a proper size screwdriver is used, in order not to destroy the slot. In view of the fact that the jets are made of brass, great care should be taken when cleaning, in order that the size of the drilled holes which regulate the amount of gas supplied to the motor, will not be increased. When replacing the jets, care must be taken that they are screwed in tight against their seats, so the gasoline passes through the proper drilled holes and not around the threads.

TO CLEAN CARBURETOR

The carburetor bowl should be cleaned every 5,000 miles. Unscrew the body and bowl connecting nut. The bowl may then be removed and washed in gasoline. Be careful not to bend the end of the fuel metering rod which extends through the vertical jet.

Remove all particles of lint from the inside. When reassembling, make certain that the bowl ring gasket is smooth and in place on the machined surface of the body casting, before replacing the bowl. Also, make certain that the body and bowl connecting nut gasket is not torn and is in place. Then tighten the nut securely.

ADJUSTMENT

The carburetors used on Chevrolet cars have been carefully tested and adjusted to the motor, before leaving the factory. No adjustments should be made by the owner, as it has been found by experience that those made at the factory are proper for all changes in gravity and atmospheric conditions when the motor has been heated to a proper temperature. IF THE CARBURETOR ON YOUR CAR APPEARS TO BE GIVING TROUBLE, CONSULT

THE CHEVROLET DEALER. Too often adjustments of the carburetor are made when, in reality, something else is causing uneven running or the motor has not thoroughly warmed up. It is well to remember that any changes in a carburetor's action will usually come gradually and not suddenly. Therefore, if your car was operating properly when run last, you may depend upon it that some other part of the motor is at fault and the trouble should be located and corrected before attempting alterations to the carburetor.

To adjust, proceed as follows:

To adjust the idling mixture, open the idle adjusting screw from ¾ to 1¼ turns, or until the motor hits evenly without loading or missing. Turning this screw to the right produces a richer mixture.

Idle engine speed is regulated by the throttle lever adjusting screw. This acts as a stop for the throttle lever and prevents the throttle valve from closing too tight and allowing the motor to stop when the accelerator is released. With the hand throttle on the instrument panel closed, set the throttle lever adjusting screw so that the motor will run 300 revolutions per minute. If the motor runs too fast, back the adjusting screw out. If too slow, turn in until the proper speed is obtained. Best results in both performance and economy are obtained with the mixture set as lean as possible.

The lever which operates the accelerator pump plunger arm is provided with three adjustments or settings, (Fig. 24). The first hole or setting is for winter driving and is marked "W", the center hole is for normal climatic conditions and is not marked, while the third hole is for summer and is marked "S".

The cars, when shipped from the manufacturing plants, have the pump plunger arm set in its normal position and the change from normal to summer setting should be made when atmospheric temperatures are consistently above 65 degrees F. The change from normal or summer setting to winter setting should be made when the atmospheric temperatures are consistently below 65 degrees F.

The center or normal setting will give fair performance, for usual climatic conditions, but if the best performance is desired, we suggest that changes be made according to the above instructions.

FUEL PUMP

The fuel pump (Fig. 25) is of the diaphragm type and is attached to the crankcase and is operated from an eccentric on the camshaft. Reciprocal motion of about ¼" maximum is imparted to the rocker arm by the eccentric on the camshaft.

The diaphragm is composed of several layers of specially treated flexible cloth which is absolutely impervious to gasoline and benzol. This cloth material is held between two metal discs and is pushed up-

ward by a pump spring. This diaphragm, in its upward motion, almost fills the pump chamber so that, in its downward movement, a very high vacuum is obtained, thus assuring high pumping capacity, even at low speeds.

The repeated movement of the diaphragm is possible indefinitely without any injury, due to the extreme flexibility of this material. Further, the movement of the diaphragm occurs only when the carburetor needs fuel. When the carburetor needs fuel, this movement is directly proportional to the amount of gasoline used by the motor. This means that in practically all normal driving conditions this diaphragm is pulsating in a movement of a few thousandths of an inch.

This movement is controlled by linkage because, when the diaphragm is in the depressed position, due to sufficient fuel in the

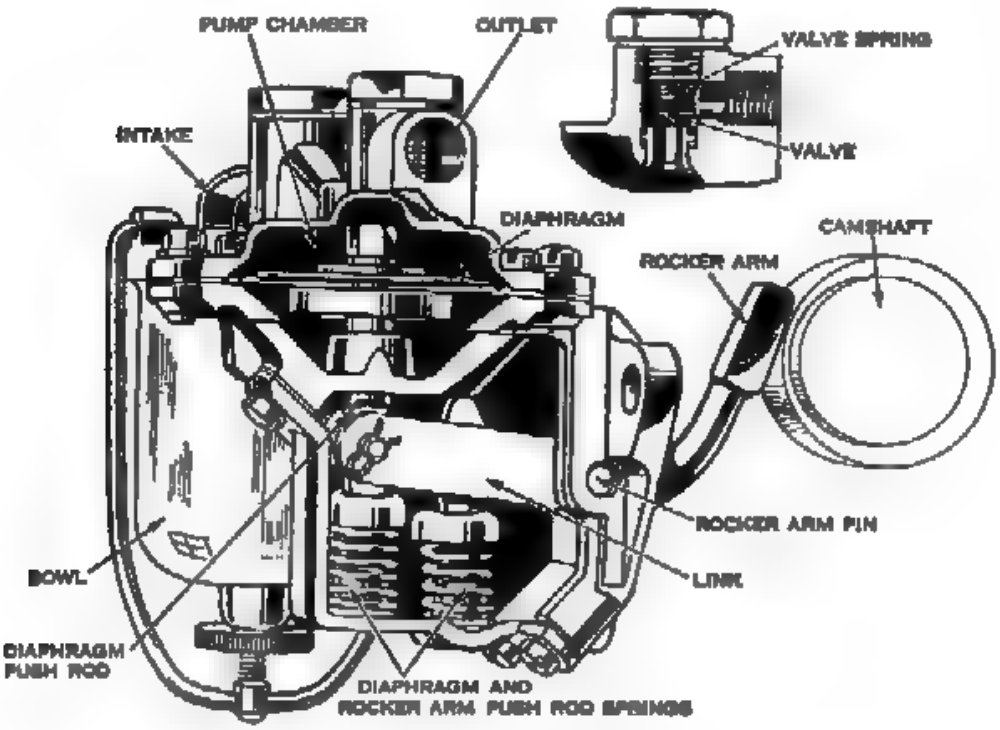


Fig. 25—Fuel Pump

carburetor, the up and down movement of the fuel pump link ceases and the rocker arm spring keeps the rocker arm in contact with the eccentric on the camshaft.

OPERATION OF FUEL PUMP

The following is a description of a complete cycle in the movement of the fuel pump:

As the camshaft revolves, the eccentric lifts the rocker arm, which is pivoted at the pivot pin and which moves the linkage, together with the diaphragm, downward against the spring pressure, thus creating a vacuum in the pump chamber.

The downward stroke of the pump draws fuel from the rear tank, which enters at the intake, fills the bowl and thence passes through the strainer and suction valve into the pump chamber. On the return stroke, the spring pressure pushes the diaphragm upward, forcing fuel from the chamber through the pressure valve to the outlet and thence to the carburetor.

When the carburetor bowl is filled, the float and the float chamber will shut off the inlet needle valve, thus creating a pressure in the fuel pump chamber. This pressure will force the diaphragm downward against the spring pressure, where it will remain in the downward position until the carburetor requires further fuel and the needle valve opens.

The rocker arm spring is merely for the purpose of keeping the operating lever in constant contact with the eccentric on the camshaft and thus eliminating noise.

This is a very simple and inexpensive method of pumping gasoline from the supply tank to the carburetor.

Lack of fuel in the carburetor may be caused by the following conditions, which may be remedied without removing the fuel pump from the motor:

1st—All pipe fittings must be tight, to insure proper pump operation.

2nd—If the glass bowl becomes loose, tighten the retaining nut making certain that the cork gasket lies flat in its seat and is not broken.

3rd If the filter screen becomes clogged with sediment, remove the glass bowl and clean the screen assembly, being sure that the cork gasket is properly seated when re-assembling the bowl.

4th—If the pump valves are dirty or warped, remove the valve plug and replace the valve, being absolutely sure that the stem of the valve plug is inside the coil spring and that the gasket is under the valve plug.

We recommend that all fuel pump troubles be taken up with your nearest Chevrolet Dealer, rather than to attempt the dis-assembling and repair of the pump.

It is not necessary to prime this fuel pump.

AIR CLEANER

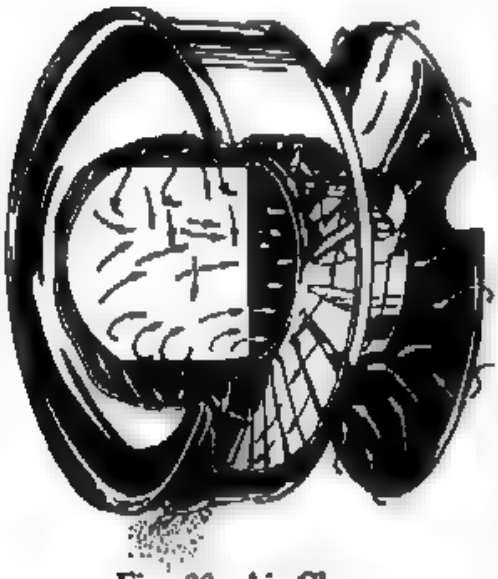


Fig. 26—Air Cleaner

The principle of the Chevrolet Air Cleaner (Fig. 26) is similar to that of the ordinary cream separator, in that centrifugal force is used to separate two substances of different specific gravities. In this case, they are air and dust.

Road dust pollutes the air, which very severely wears the moving parts, because it is composed largely of minute particles of sharp-edged sand or quartz. Dust, if drawn in with the carburetor air, mixes with the oil film on the cylinder walls, where it grinds with each piston stroke.

ETHYL GASOLINE

Our experience with Ethyl gasoline for the past few years indicates that it is a satisfactory fuel for use in Chevrolet cars.

GASOLINE GAUGE

This car is equipped with an electrically operated gasoline gauge which increases motoring convenience and safety, by placing accurate indication of the fuel supply directly before the motorist at all times when the engine is running. The dial of the gauge is illuminated by a concealed bulb to facilitate night reading.

COOLING SYSTEM

The radiator at all times should be kept full of clean water, or trouble is sure to follow. It is a good plan to form the habit of inspecting and filling the radiator before the car is taken from the garage. On long tours, especially when you have been traveling over hilly roads or those

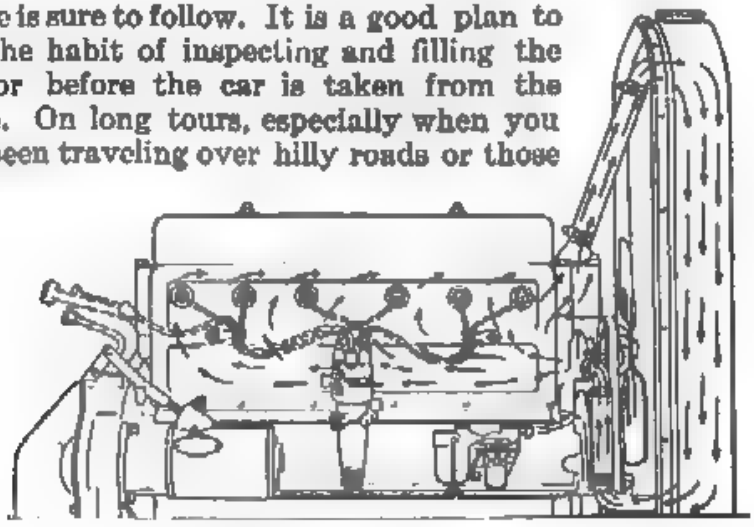


Fig. 27—Cooling System

with a loose top surface, examine the water supplyquite frequently. Consider, always, that the proper amount of water is as important as your supply of gasoline and oil. It is well to examine the water supply every time a stop is made for oil or gasoline.

Always use clear water. If rain water can be had, use it, as less scale or deposit will result. The total capacity is 10 quarts.

Once a month it is a good plan to open the radiator drain cock, which is conveniently located on the right side at the bottom of the radiator, and let all the water and accumulated dirt run out. If the water is very dirty, flush the radiator with fresh water.

Never pour cold water into the radiator or cooling system while the motor is hot, as it will crack the cylinder head.

If a leak develops in the cooling system, have it repaired immediately by your Chevrolet Dealer or Service Station.

It is not a good plan to put anti-leak compounds, corn meal, bran or other similar substances in a radiator, to stop a leak. It fouls the tubes and decreases the efficiency of the radiator. Make a permanent repair as soon as a leak is discovered.

WATER PUMP

The water pump circulates the water in the cooling system and, by the adoption of balanced impeller blades, the life of the thrust washer is lengthened and the water pump efficiency maintained.

The water pump packing, which is called the pre-formed metallic type (Fig. 28), is assembled in the pump body in two halves, with a pressed steel spacer between them. The cavity in the spacer receives

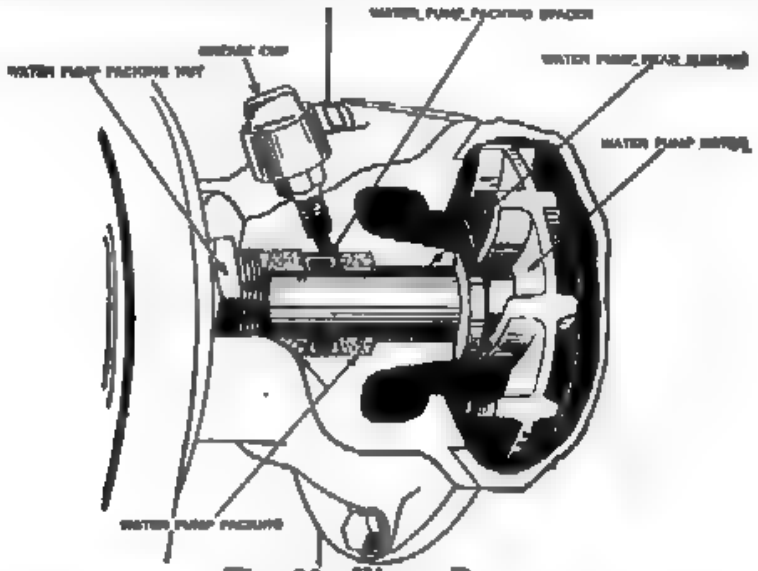


Fig. 28—Water Pump

the grease from the grease cup and delivers it to both halves of the packing and the rear bushing. With this type of packing and spacer, the operation of tightening the packing nut against the packing is reduced to infrequent intervals.

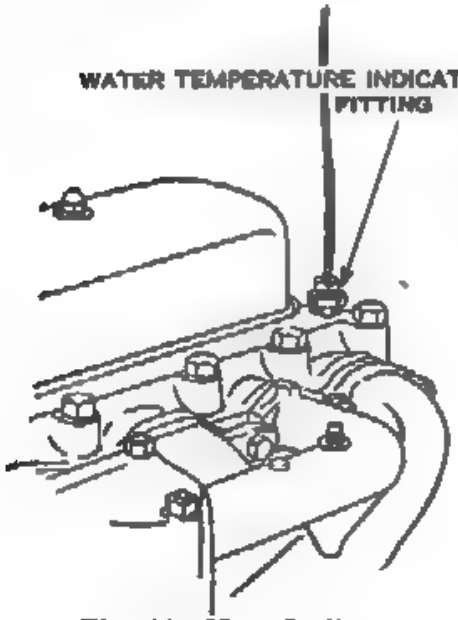


Fig. 29—Heat Indicator

When the packing nut has reached its limit of travel against the packing, new packings should be installed.

HEAT INDICATOR

Fig. 29 illustrates the heat indicator unit, which is mounted in the cylinder head. It is electrically connected to the indicator dial on the instrument panel and tells the driver the water temperature condition of the motor at all times.

Do not attempt to repair this unit. If it should fail, consult your Chevrolet Dealer.

ANTI-FREEZING SOLUTIONS

In selecting anti-freezing solutions for winter operation, the local conditions and the type of service must be considered. The following information is given to enable the individual owner to more intelligently select the anti-freezing solution best suited to meet his own conditions.

The available commercial materials for preparing anti-freezing solutions for automobile radiators are denatured alcohol, distilled glycerine and ethylene glycol.

DENATURED ALCOHOL

Denatured alcohol solutions are, at present, the most generally used anti-freezing solutions. Denatured alcohol is widely distributed, affords protection against freezing and is not injurious to the materials used in the cooling system.

There are two principal objections to denatured alcohol. Alcohol is lost by evaporation, especially on heavy runs, and unless the solution is tested periodically and sufficient alcohol added to replace the loss by evaporation, the motor or radiator, or both, are likely to be damaged by freezing. The car finish is damaged by contact with the alcohol solution or vapors from the solution. Any alcohol accidentally spilled on the finish should be flushed off immediately with a large quantity of water.

GLYCERINE AND ETHYLENE GLYCOL

Distilled glycerine and ethylene glycol solutions are, in first cost, more expensive than alcohol but, as they are not lost by evaporation,

only water need be added to replace evaporation losses. However, any solution lost mechanically, such as by leakage, foaming, etc., must be replaced by additional new anti-freezing solution. These solutions, under ordinary conditions, are not injurious to the car finish.

The principal objections to glycerine and ethylene glycol are the tendency of these solutions to loosen the scale and iron rust which forms in the water passages of the cylinder block and head and the difficulty of securing and maintaining tight leakproof connections. It is absolutely necessary to thoroughly clean and flush the entire cooling system before glycerine or ethylene glycol is used. It is also necessary to tighten or replace the cylinder head gaskets and pump packing. The cylinder head gaskets must be kept tight to prevent the solution from leaking into the crankcase where it might cause gumming and sticking of the moving parts. The pump packing must be kept tight to prevent air from being drawn into the cooling system, in order to avoid foaming and other difficulties which may result when air is present.

Glycerine or ethylene glycol should be used in accordance with the instructions and in the proportions recommended by the anti-freeze manufacturer.

TESTING SOLUTIONS

In using a hydrometer to determine the temperature at which a solution will freeze, the test must be made at the temperature at which the hydrometer is calibrated. If the solution is warmer or colder, it must be brought to this temperature or large errors may result. In some cases these errors may be as large as 30 degrees on the thermometer scale.

OTHER ANTI-FREEZING SOLUTIONS

Salt solutions, such as calcium or magnesium chloride, sodium silicate, etc., honey, glucose and sugar solutions and oils are not satisfactory for use in automobile radiators.

ELECTRICAL SYSTEM

The electrical system used on the Chevrolet Universal model is called the double unit system with ground return and consists of the following units: generator, starting motor, distributor, ignition coil, wiring harness, storage battery, cutout relay, ammeter, heat indicator, horn, ignition lock and lamps.

Each one of these units is self-contained and requires very little attention from the owner. There may be times, however, when expert advice is required. When this is necessary, consult your Chevrolet Dealer.

GENERATOR

The construction of the generator is as simple as such a piece of electrical equipment can be made and, beyond a few drops of oil every 500 miles, requires no special attention.

The generator and connections should be examined occasionally to see that all are tight. If trouble in the generator is suspected or if the ammeter does not show a proper charging rate at ten to twelve miles an hour, the car should be taken to the Chevrolet Dealer or Service Station for examination and possible necessary repair.

When cold weather arrives, we suggest that you call at your Chevrolet Dealer's Service Station and have the third brush on your generator advanced slightly, thus increasing the charging rate. This suggestion is made because of the fact that more current is required in cold weather driving than in summer driving.

At least once a season, the generator commutator should be cleaned and the brushes re-ground, and we would recommend that this work be handled by your Chevrolet Dealer.

STARTING MOTOR

The starting motor (Fig. 30), is mounted on the clutch housing, having a pinion which automatically engages the flywheel when the starter pedal is depressed.

As soon as the motor starts under its own power, the foot should be removed from the starter pedal and the starter pinion will automatically be disengaged from the flywheel.

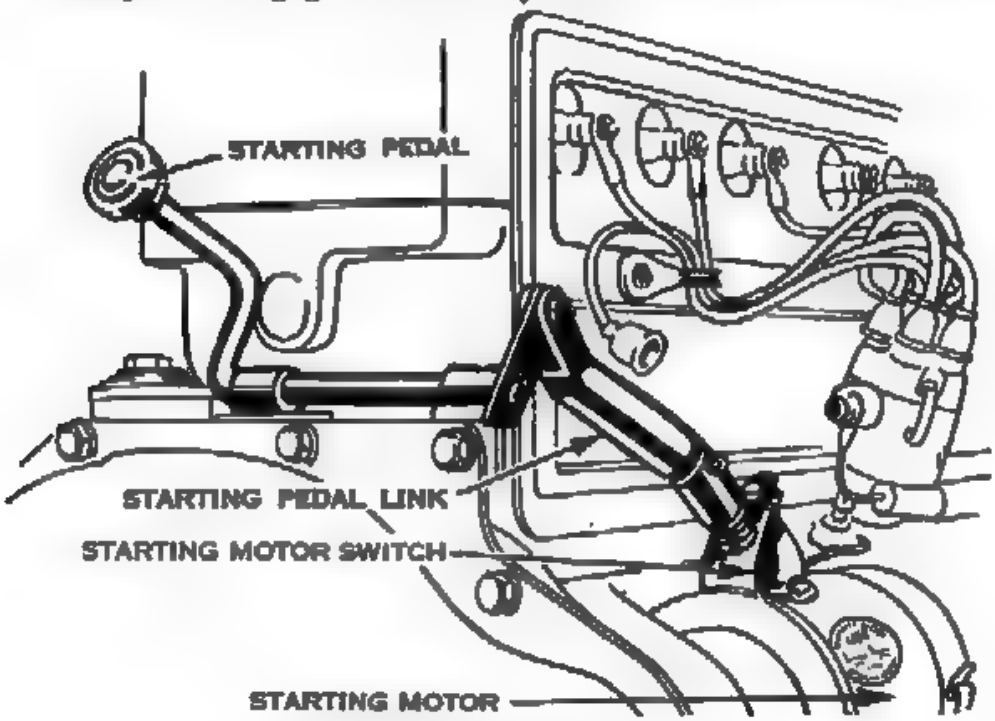


Fig. 30—Starting Pedal and Linkage

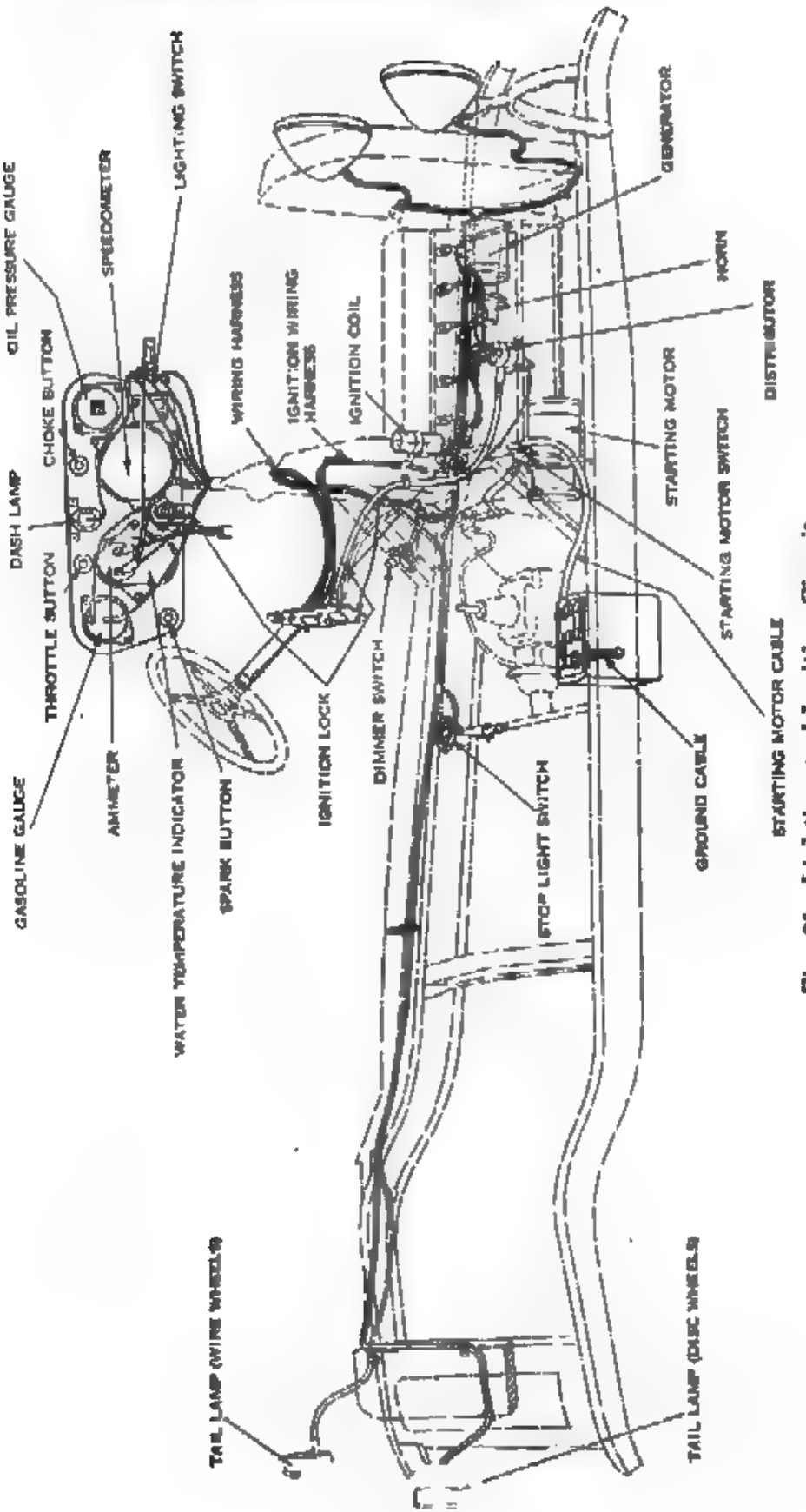


Fig. 31—Lighting and Ignition Circuit

If, when starting the motor, the starter pinion goes into mesh with a bang or is accompanied by considerable noise while cranking, take your car to the Chevrolet Dealer or Service Station and have it examined carefully. Repairs to the starting motor should not be attempted by the owner.

STARTING MOTOR DOES NOT OPERATE

This is an infrequent source of difficulty but may be caused by any one of the following:

1st—Exhausted battery, due to excessive use of the starting motor or lights, and is the direct result of failure on the part of the owner, in not observing the rules set forth for the care of his battery (Fig. 43).

2nd—Broken or loose wires or connections, either at the battery or starting motor. Be absolutely sure that the connections at the battery and starting motor are secure. Examine all connections and wires carefully. See that all connections, including battery terminals, are clean and tight. Inspect the cable leading from negative post of the battery to the frame and see that this is a clean, firm contact with the frame of the car.

3rd—Corroded battery terminals, causing poor contact. Remove and thoroughly clean, then cover with vaseline or petroleum jelly.

4th—Starting switch making poor contact.

5th—Starting motor may be "short circuited."

6th—Starting motor brushes worn out or not making contact, or the commutator may need cleaning.

FAN AND GENERATOR BELT ADJUSTMENT

The fan and generator belt is so designed that very little adjustment is required.

The belt should not be tight, only having sufficient tension to keep it from being thrown off the pulleys when the motor is run at a high speed.

By referring to Fig. 32, the method of adjusting the belt will be made clear. All that is necessary to do when the belt needs adjustment is to loosen the clamp bolt and pull the generator outward and away from the motor.

TO REPLACE FAN AND GENERATOR BELT

Loosen generator adjusting nut (Fig. 32) and move generator toward the motor as far as it will go. Then place the belt over the pulleys; then pull the generator outward and away from the motor

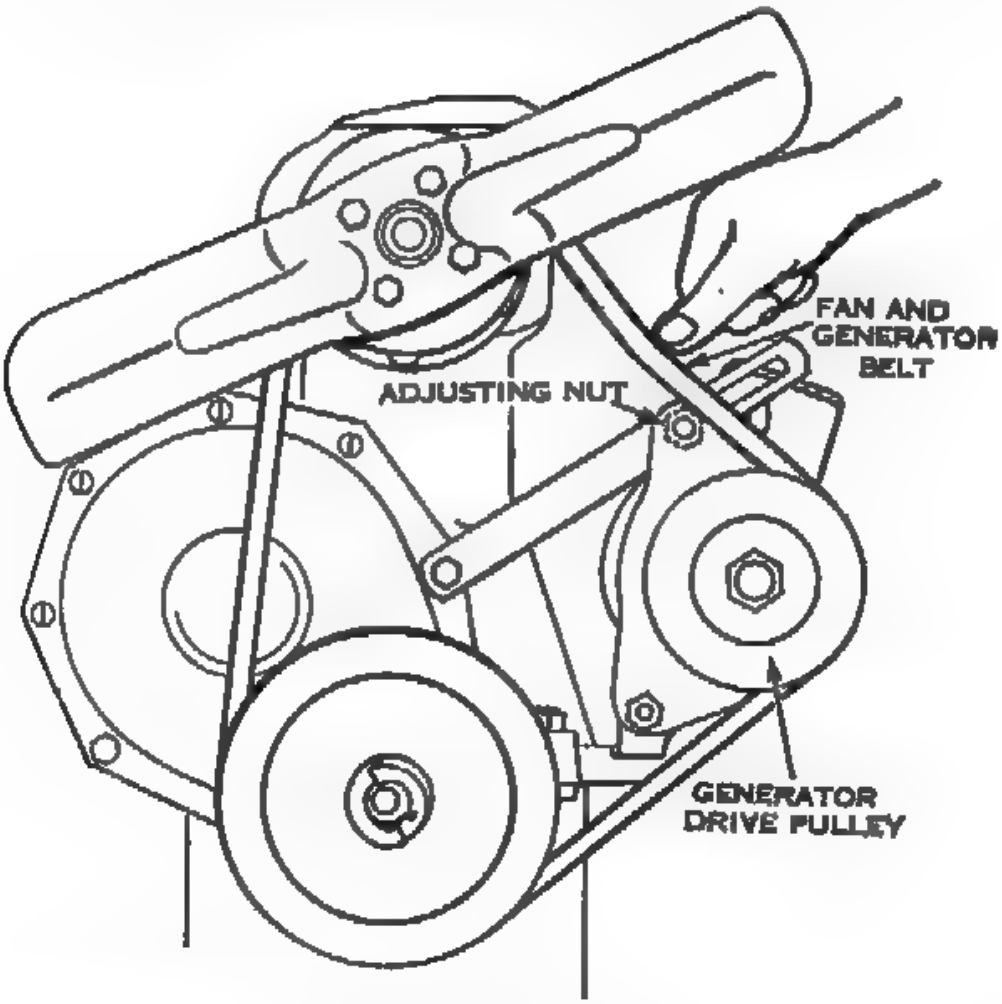


Fig. 33—Fan Belt Adjustment

and tighten the adjusting nut. Do not run the motor with the fan and generator belt too tight. See that it has a small amount of "slack."

IGNITION

The motor derives its power from the explosion and expansion of compressed gas in the combustion chambers, the expansion driving the pistons down, which produces power.

These charges of gas are ignited by an electric spark made in the combustion chamber.

The primary current, which ranges from six to eight volts, is distributed at regular intervals by the breaker arm contacts in the distributor to the coil, through the primary wire, where it is transformed to a high tension or secondary current which flows to the distributor through the high tension wire and from the distributor to the spark plugs.

The ignition equipment used on Chevrolet cars is designed to give an even, hot spark at all times, regardless of motor speed. It is therefore possible to run your car at slow speeds with an even flow of power and also, to accelerate without stalling.

IGNITION TROUBLES

First of all, ascertain whether the trouble is in the distributor, the wiring or the spark plugs. In most cases it will be found in the external wiring or plugs, when one cylinder continually misfires.

Determine the location of the trouble by the process of elimination, testing each unit until the trouble has been located.

When the motor misfires regularly on one or more cylinders, it is probably caused by one or more dirty spark plugs. To locate the particular faulty plug, proceed as follows:

1st—Operate the motor at idling speed with retarded spark.

2nd—Grasp a screwdriver by its wooden handle holding the metal end against the spark plug terminal and at the same time touch the cylinder head, thus short circuiting the plug (Fig. 33). Be careful to hold the screwdriver by the wooden handle, or a shock will result. Short circuiting a spark plug which is not working will not change the motor speed. On the other hand, it will cause the motor to slow down or stop, if the short circuit is established with a working plug. After the dirty or fouled plugs have thus been located, they should be cleaned and adjusted or replaced by new ones.

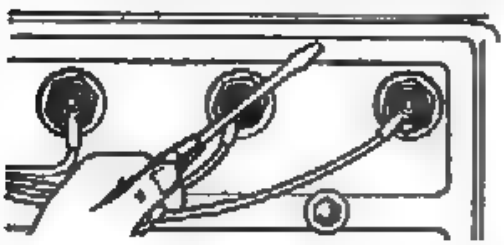


Fig. 33—Short Circuiting Plugs

Be sure that the new plugs are of the correct type and size, as supplied with the car. When plugs have been in use for approximately ten thousand miles, we recommend a complete new set.

IGNITION LOCK

The ignition lock, Fig. 34, provides a means of locking the motor when it is not operating, by grounding and opening the ignition circuit. The ignition lock is mounted on the instrument panel and is connected to the distributor by means of a heavy, armored cable. Connection is permanently made at the distributor by means of an armored snap terminal.

Turning the switch key rotates the switch contact to the position in which it connects the coil to the distributor and brings the latter in contact with the ground connection.

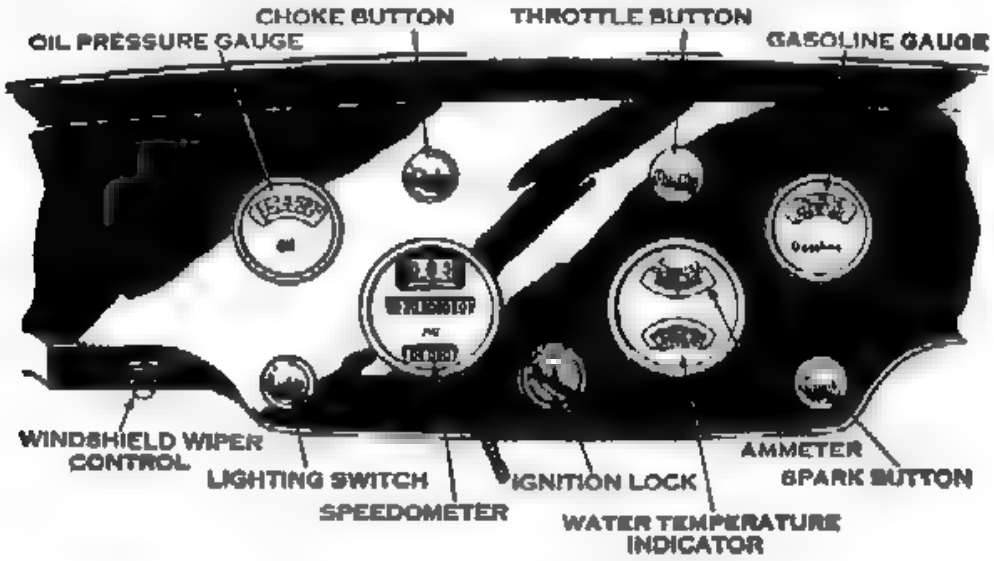


Fig. 34—Instrument Panel

DISTRIBUTOR

The distributor, Fig. 35, is the semi-automatic type, which means that the spark is operated both manually and automatically. The condenser is mounted on the unit, instead of in the coil. The ignition lock terminal is also shown in Fig. 35.

Fig. 36 shows the distributor with breaker plate removed. In this mechanism, there are two weights "AA" hinged at point marked "BB." They are held in position, shown by springs "CC."

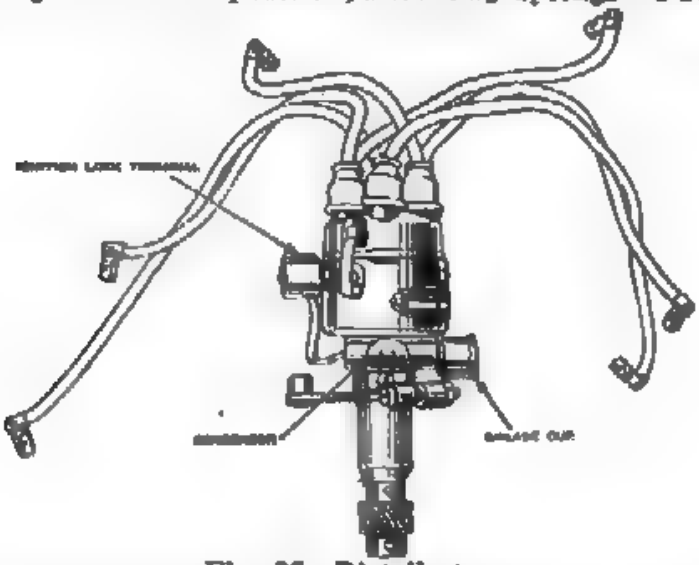


Fig. 35—Distributor

At car speeds below 22 miles per hour, the automatic feature does not function and the only variation in firing is obtained by the spark control button on the instrument panel. At car speeds of 22 miles per hour or more, centrifugal force begins to throw both weights out until, at a maximum speed, they reach the point as shown in Sketch

2. In their outward movement, because of the manner in which they are connected with the cam, they advance the position of the cam beyond the point shown in Sketch 1, and therefore advance the firing of the motor.

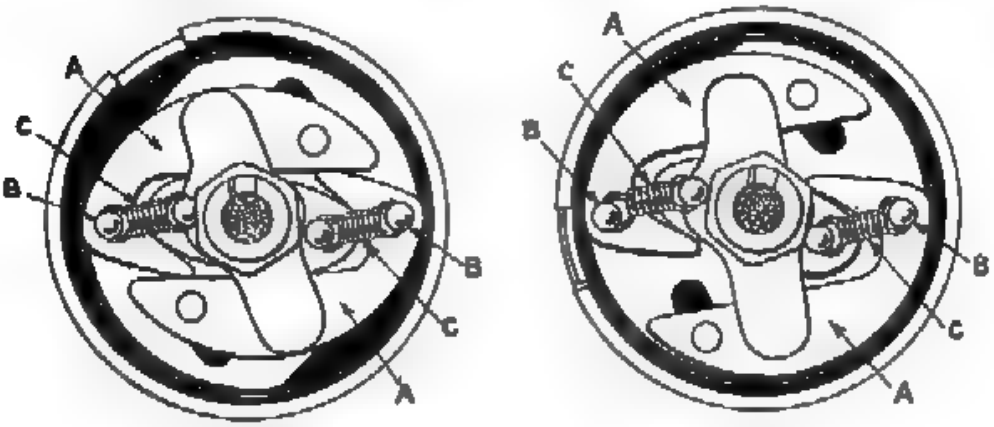
The distributor requires no special attention, except turning down the grease cup one-quarter turn every five hundred miles and occasionally examining the spring contact point on the top of the distributor arm. This spring makes contact with the center point in the distributor head.

ADJUSTING BREAKER POINTS ON SEMI-AUTOMATIC DISTRIBUTOR

The contact points on the semi-automatic distributor are fixed in their mounts and are controlled by an eccentric screw moving the mounting plate (Fig. 37).

To adjust the gap, proceed as follows:

1st—Turn the motor over until the cam is in the position shown in Fig. 37. The contact points are then opened the maximum distance.



Sketch 1 Sketch 2

Fig. 36—Distributor Breaker Plate

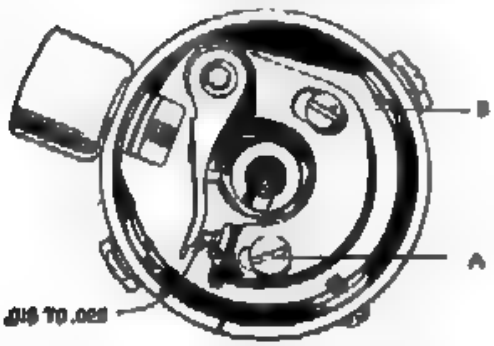


Fig. 37—Adjusting Breaker Points

2nd Loosen set screw "A".

3rd—Turn eccentric adjusting screw "B" to the right or left, increasing or decreasing the gap to the desired distance.

Correct breaker point gap is .018" to .025".

4th — When properly set, lock in position by tightening set screw "A".

The contact points will require little attention or refilling, even though they may be rough and irregular. When they become so

badly burned as to cause missing, they should be "trued" so that their contact surfaces are exactly parallel. The best way to do this is to secure a thin Swiss or jewelers' file, insert the blade between the contact points, then press them together firmly with the fingers, at the same time withdrawing the file.

TESTING DISTRIBUTOR

If trouble is suspected with the distributor, first see if electric current is being delivered to the distributor by the primary wire from the switch and battery. If the distributor is functioning properly, the primary current will pass through the breaker arm and contact points direct from the coil when the contact points are closed. To determine whether there is any trouble at this point, disconnect the primary wire at the coil which leads from the distributor to the coil and, with the contact points closed and with the ignition switch turned on, strike the terminal end of the wire against the terminal on the coil. If there is a spark, the current is flowing properly. If no spark is obtained, make the following examination:

Examine the spring on the distributor arm. See that this is not broken and that it is making a good contact with the high tension terminal in the center of the distributor cap.

Examine the primary wire. See that the insulation is good and that it is properly fastened to the distributor.

Occasionally oil or grease will get into the distributor and form a connection between the case and the insulated contact point. Wipe out thoroughly.

There may be a "ground" in the distributor, due to defective insulation between the supports of the contact points and the distributor housing.

Examine the contact points to see that they are clean, not burned or corroded, and are opening and closing properly.

TESTING COIL

In order to determine if the coil is operating properly, secure a piece of wire, attach one end on the frame of car or motor casting or other metallic "ground," bring the other end to within $\frac{1}{4}$" from the point where the high tension wire (running from coil to the central terminal on the distributor) leads from the coil and crank the motor by hand with the switch on. If a spark occurs at this point, the coil is operating properly. If no spark occurs and the primary circuit from the battery to the coil is intact, it is evident that the coil should be replaced or repaired.

There are times, however, when it is possible to obtain a spark in a test of this kind when the coil will not operate properly at higher speeds. If ignition trouble occurs and it is impossible to locate the trouble at other points, the coil should be taken to a Chevrolet Service Station, where a test can be made.

INSPECT WIRES AND ELECTRICAL CONNECTIONS

Raise the hood and examine all wiring, Fig. 31 making sure there are no loose terminals.

Examine all connections to spark plugs.

Examine all connections to the coil.

Examine all connections to the generator and circuit breaker.

Examine starting motor cable, to make certain that it is securely fastened to the starting motor.

Next, examine all connections on the dash. Fig. 31. Be sure the negative or short cable is securely clamped to the battery terminal and has a good, solid, clean electrical contact to the frame.

SHORT CIRCUITS

A short circuit occurs when any two wires of opposite polarity come in contact at exposed places or with any metallic conductor. This will discharge the battery in a very short time; therefore, THE GREATEST CARE SHOULD BE TAKEN TO SEE THAT ALL CONNECTIONS REMAIN TIGHT AND THAT THE INSULATION OF ALL WIRES IS NOT BROKEN OR CUT.

To prevent a short circuit from damaging the wiring, a fuse is inserted on the rear of the lighting switch. When this "blows" it can be easily replaced; however, before doing so, be sure everything else in the wiring system is in good order.

If the ammeter hand shows a discharge when the lights are turned off and motor idle, disconnect the positive (+) wire from battery, and if the hand goes back to zero, it shows that there is a leak or a short circuit, which should be remedied at once. If the hand does not go back to zero, the needle is bent.

Examine the ammeter. With the lights turned on and the motor idle, the ammeter should register "discharge." If it stands at zero, consult your Chevrolet Dealer at once.

You may operate your car while the ammeter is being repaired, by connecting the two ends of the wires removed from the ammeter. Be sure to thoroughly cover the connection with electricians' tape.

TEST OF PRIMARY CIRCUIT

When testing the primary circuit, there are practically only two things to be taken into consideration—namely, the condition of the contact points in the distributor and the wiring.

SPARK PLUGS

The spark plugs in the Chevrolet motor have been designed and made expressly for this motor by the AC Spark Plug Company of Flint, Michigan.

SPARK GAP

Spark plugs will not deliver their maximum spark unless the sparking points are properly spaced and the spark gap of these plugs should be set at .025".

CLEANING POINTS

Cleaning the sparking points of AC plugs should be done with emery cloth.

The correct AC spark plug for Chevrolet cars is AC, Type G, and can be had at all Chevrolet Service Stations.

CLEANING CARBON FROM THE PORCELAIN

To clean carbon from the porcelain, proceed in the following manner: Fill the lower part of the plug with alcohol, or any liquid metal polish, and allow to stand for a few seconds; take a piece of wire covered with one thickness of cloth and rub the carbon from the porcelain, so as not to affect the glaze; then wipe clean and dry thoroughly before replacing in the motor.

Spark plugs should be changed every 10,000 miles, as they deteriorate. New spark plugs mean quick starting, increased power, smoother running motor and less use of choke, resulting in more economical operation of the car.

SPARK PLUG WIRES

To determine if the spark plug wire is at fault, disconnect it from the spark plug and hold the end about ¼" from the plug. If no spark jumps across the gap with the motor running, examine the terminals and insulation. If no exterior damage can be found, replace the wire on the plug and, with the motor running, slip the wire out of the socket or the distributor cap and hold it about ¼" away from the brass ring on the socket. If no spark is obtained, remove the distributor cap and examine the terminal point protruding from the inside of the cap. If it is found burned or blackened on the point, thoroughly clean and polish.

LIGHTING SYSTEM

The lighting system used is commonly called the single wire with ground return and includes headlamps, instrument panel light, tail light (and dome light in closed cars).

The lighting system is controlled from the lighting switch on the instrument panel.

HEADLAMPS

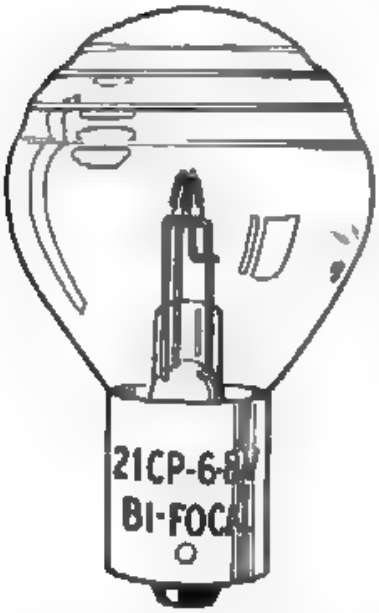


Fig. 38—Headlamp Bulb

The bodies of the headlamps are black enamelled and the rims are chrome plated.

These lamps embody the depressible beam and fixed focus feature—i. e., the 21-candle power bulbs are provided with two separate filaments, one being on the exact center of the reflector and the other filament slightly above the center of the reflector. The candle power of each filament is the same; therefore, the deflection of the light beam from the upper filament to the lower does not affect the brightness of the beam.

The headlamps are properly aimed at the factory and re-aiming should not be necessary, unless the adjustment of the head lamp support bolt nut has been disturbed.

The operation of the depressible beam is affected by means of a foot switch located on the toe board riser, close to the clutch pedal, Fig. 2.

Fig. 39 illustrates the headlamp with the bright and dim bulb, as well as the parking bulb and special lens.

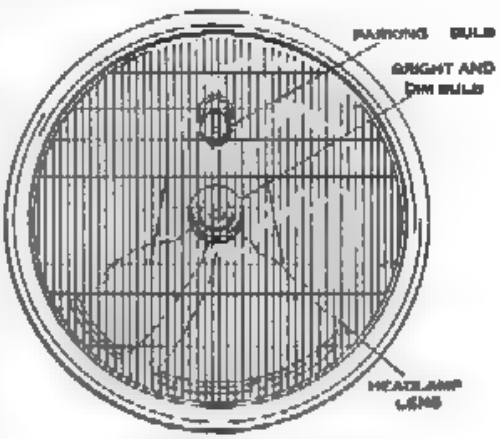


Fig. 39—Headlamp Lens

The specially designed lens is made up of a series of prisms which effectively "bend" the beams of light, to obtain the desired light pattern. This lens is used in connection with a plain reflector.

Proper headlamp adjustment may be obtained by following the instructions outlined in Fig. 40. The chart is self-explanatory and no further comments are necessary.

STOP AND TAIL LIGHT

All Chevrolet cars are equipped with a combination stop and tail lamp, Fig. 41. The stop and tail lamp is built in a unit containing two bulbs. The stop light is a single contact six-volt, fifteen candle power bulb. While the tail lamp is single contact six-volt, three candle power bulb.

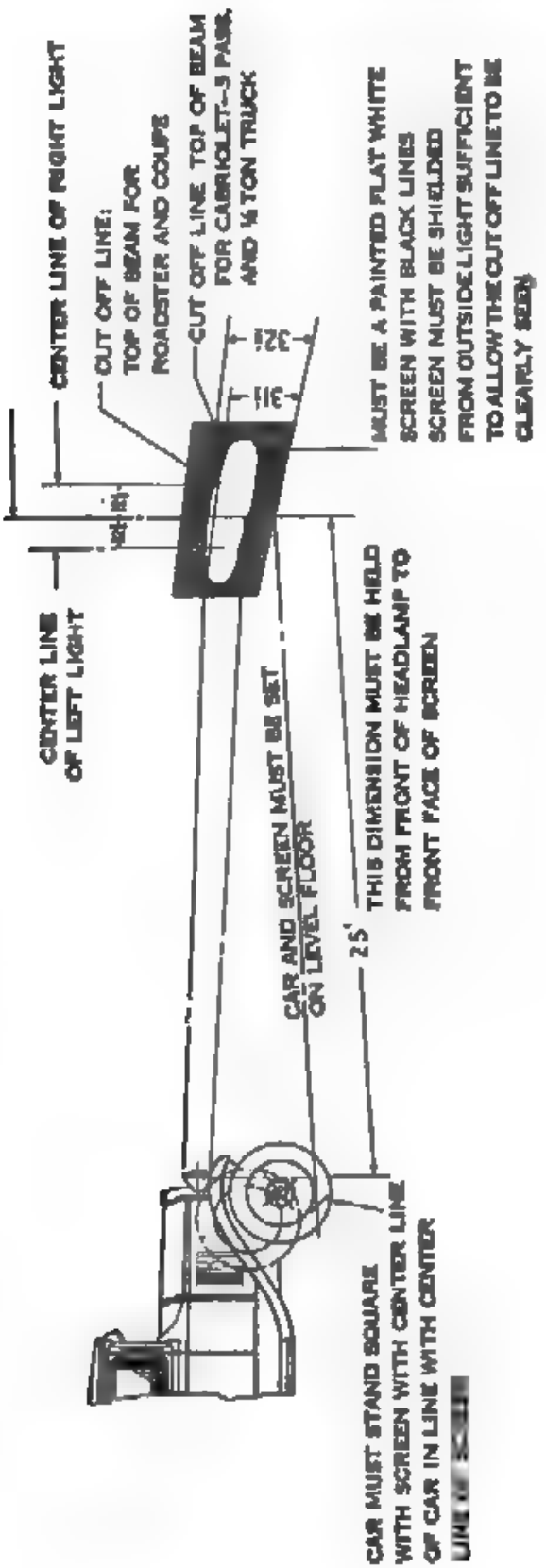


Fig. 40—Headlamp Aiming Chart

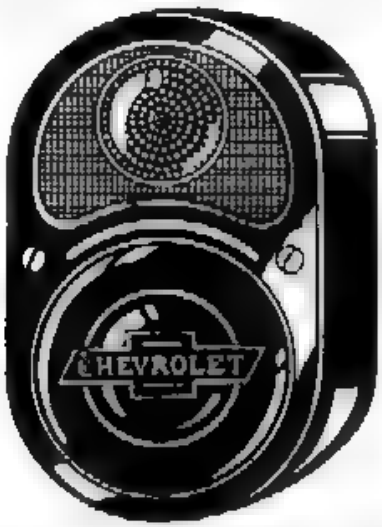


Fig. 41—Stop and Tail Lamp

When the tail light is on and the stop light is off, the upper part of the stop light is dark, but as soon as the brake pedal is pressed forward slightly, the upper part of the stop light is illuminated and remains bright until the brake pressure is released.

Refer to Fig. 42 for detail wiring diagram. Adjust switch operating lever on brake cross shaft, so that switch will make contact just as the brake begins to engage.

The stop light switch, Fig. 42, is entirely self contained and will be serviced as a unit only. The switch operating lever which attaches to the brake cross shaft is sold separately.

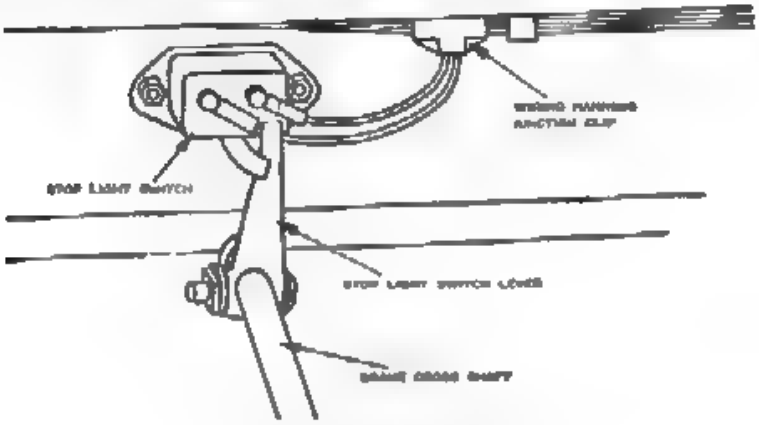


Fig. 42—Stop Light Switch

CARE OF BATTERY

The failure of a storage battery may be attributed to four causes:
1st—Corrosion at connections.
2nd—Loose connections.
3rd—Low water level in cells.
4th—Discharged battery condition.

Therefore, to

1st—Prevent corrosion, clean the terminals and paint them with vaseline.

2nd—Prevent loose connections, tighten them.

3rd—Prevent low water level, make it a practice to add distilled water at least every two weeks.

4th—Prevent a discharged condition, test specific gravity every two weeks with the hydrometer, as shown in Fig. 43, and avoid excessive use of the starting motor, excessive night driving and short, low speed driving, particularly in winter time.

When a new car is purchased, the owner should consult with his Dealer regarding the battery registration, inspection and service plan pertaining to the particular make of battery which is in his automobile.

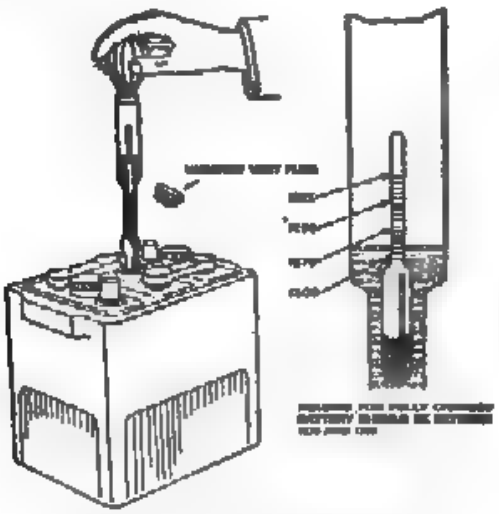


Fig. 43—Storage Battery

The specific gravity of a fully charged battery is between 1.275 and 1.300. If successive readings show lower values (for example—1.265 and 1.250) this indicates that the battery is gradually becoming discharged. In other words, the battery is required to generate more current than the generator is sending back through the battery, to keep it in properly charged condition. The generator, in this case, should be readjusted to deliver more current. Serious injury will result to the battery if the battery is not kept charged. In taking the readings, care should be exercised to return the electrolyte from the hydrometer syringe to the same battery cell from which it was taken.

Keep all cells filled with distilled water, to a level ½" above the top of the plates. In warm weather, it makes no difference when water is added but in freezing weather, it should be added just before using the car. The reason is that water will remain on top of the solution until it is mixed with it, by action of the battery. If not mixed with the solution, it would freeze almost as quickly as outside of the battery. Water will be required more frequently in summer than in winter. It is a good plan to add water at least once a week in summer and every two weeks in winter. When long daylight runs are made, water must be added still more frequently.

Electrolyte (sulphuric acid and water) attacks most all materials except rubber. Therefore, if this acid is accidentally spilled upon

fabrics or seat cushions or carpet, ordinary household ammonia, Gold Dust and water or common baking soda and water, if applied immediately, will counteract the effect.

In order to prevent freezing in cold weather, test your battery frequently and see that the gravity is kept up to at least 1.250. A discharged battery will freeze at a little below the freezing point.

A fully charged battery will not freeze, even at temperatures as low as 80° below zero; therefore, keep the battery fully charged.

When filling, if one cell takes considerably more water than the others, this indicates a leaky jar and the battery should be taken or sent to a battery service station. Unless repaired immediately, the battery may be ruined.

TREATMENT OF BATTERY IN STORAGE

If the car is to be placed in storage for any length of time, without the battery being removed, it should be thoroughly charged.

The proper method of handling a battery, if the car is to be placed in storage, either in winter or summer, is to remove the battery from the car and take it to a Service Station where, for a nominal sum, it will receive proper attention, which will insure it against any damage resulting from standing in a discharged condition and the owner will derive the best results when the car is again placed in operation.

GENERAL LUBRICATION

The chart on lubrication (Fig. 44) shows where and when to lubricate different units of a Chevrolet car. Oil and grease are much cheaper than repair bills and should be applied regularly, if you are to secure a maximum of useful service from your car.

To assist in meeting this problem on lubrication, the Chevrolet Motor Company has the following recommendations to make, with respect to oils:

We do not recommend the use of so-called re-refined oils, as we find that unless extreme care is used in the refining process, they are wholly unsuitable for use in Chevrolet cars.

For proper motor lubrication, a high grade, well refined oil is essential. As a guide to the proper viscosity or body of oil for summer and winter conditions, which vary so greatly in different territories, the lubrication charts of the reputable oil companies should be consulted. In general, an oil having the body of S. A. E. viscosity No. 30 is recommended for summer use, except where motors are subject to prolonged high speed driving, where a heavier oil, such as those having S. A. E. viscosity No. 40, should be used. For winter use, an oil having the body of S. A. E. viscosity No. 20 and with a zero pour test (that is, will pour from a bottle at zero temperature) should be used.

Such an oil would be satisfactory down to temperatures of from 10° to 15° above zero Fahrenheit, below which temperatures an oil of S. A. E. viscosity No. 10 and with a zero or sub zero pour test

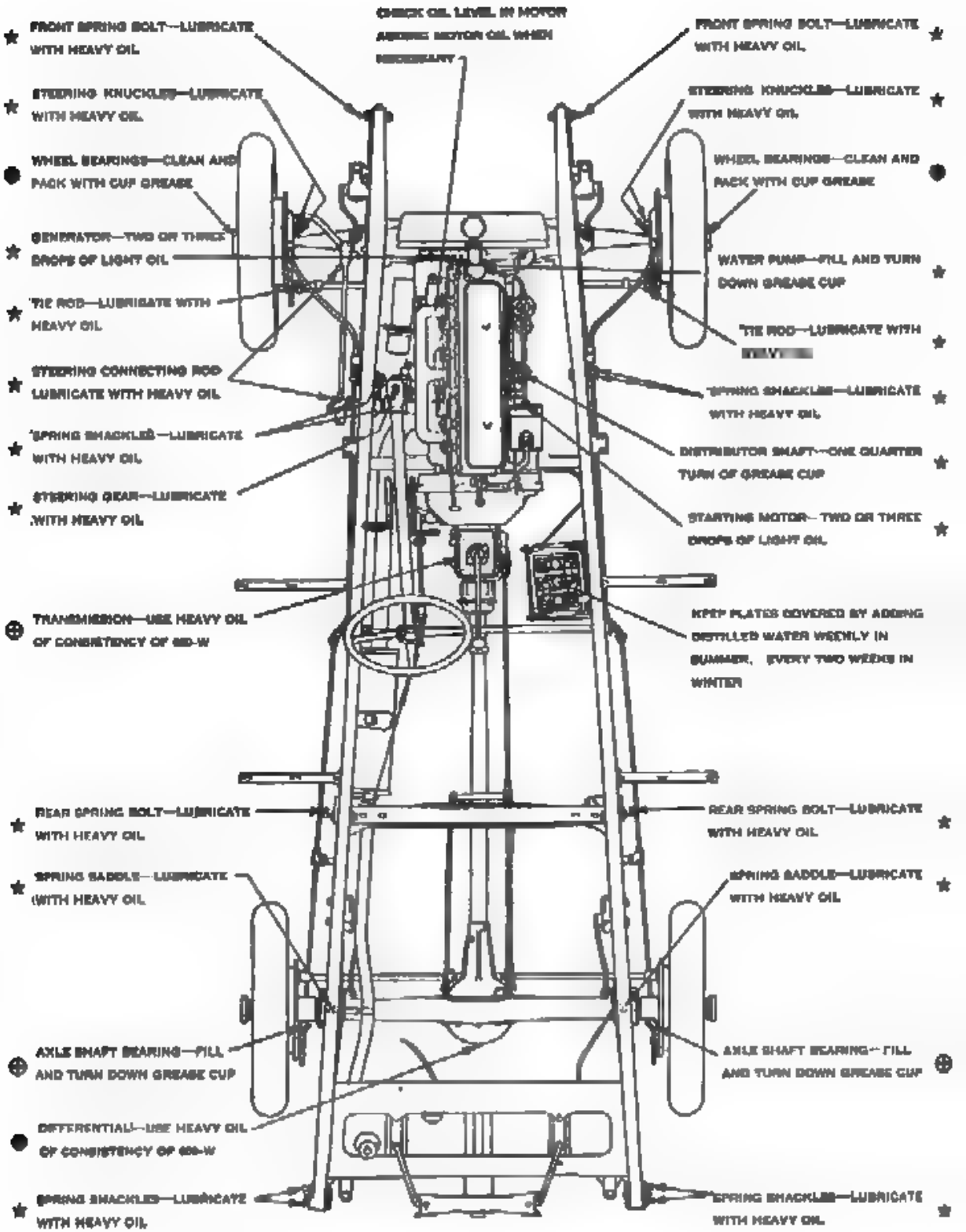


Fig. 14—Lubrication Chart

should be used. If such an oil is not procurable, an oil of S. A. E. viscosity No. 20, diluted with 10% kerosene, would give equal satisfaction.

LUBRICATION OF BRAKE LINKAGE

In addition to the various grease connections that are lubricated every 500 miles, the brake linkage, or clevis pins, rods and etc., should be lubricated with a good grade of machine oil which will insure the correct operation of these units.

LUBRICATION OF SPRINGS

With the adoption of shock absorbers, it may be desired to oil the springs. This can easily be done by brushing the sides of both front and rear springs with the oil drained from the crankcase.

OIL PRESSURE GAUGE

It should be noted that the oil gauge is an indicator only and merely shows whether the pump is working or not. The amount of pressure (12 lbs) shown on the oil pressure gauge, does not necessarily tell anything about the condition of the oil in the crankcase. Inferior or dirty oil may show sufficiently high pressure; therefore, it is necessary to follow instructions relative to changing oil (Fig. 44) in order to insure a supply of fresh, clean oil in the crankcase, at all times. If the oil pressure gauge fails to operate, consult the Chevrolet Dealer or Service Station at once.

SUGGESTIONS FOR THE MAINTENANCE OF A BODY BY FISHER

CARE OF THE FINISH

The Duco finish on a motor car possesses the merit of improving with age, at least, for several months, if the car is properly cared for and not subjected, unduly, to the elements. A body painted with color varnish begins to deteriorate the day it leaves the paint shop; a "Ducoed" body actually begins to improve, to gain in luster.

In a car with this finish, Fisher counsels against the use of anything containing abrasives or alkalis. An occasional polishing with No. 7 Duco Polish or some other recognized lacquer polish (but never with furniture polish) will restore the luster of the finish.

No. 7 Duco Polish is a cleaner, as well as a polish. It softens and removes the dirt film or "scum" which soap and water cannot clean off. It also revives weathered Duco, restoring its original beauty and luster. Do not become alarmed if the polishing cloths become stained with the color of the car. This only represents a weathering of the finish. Use a dry, clean cloth for rubbing off the polish and working up the luster. A good, brisk rubbing will work up a beautiful finish.

If alcohol, or anti-freeze compounds containing alcohol, are spilled on Duco, they should be immediately wiped off, or flushed off with water. If this is not done at once, it is sometimes possible to remove stain by using No. 7 Duco Polish.

If Duco finish becomes damaged, have repairs made by your Chevrolet Dealer or at an Authorized DuPont Duco Refinishing Station. These stations have Duco in stock and have trained men and special equipment for making repairs.

CARE OF THE TOP

The top covering of the roof of your Fisher Body is subjected to the elements—heat of the sun, snow, rain, hail and dust. When inspection shows that it is necessary, it should be treated with some well-known automobile top dressing, which may be purchased in small capacity cans. Gasoline, naptha, kerosene and fabric cleaners should not be used for cleaning the top. Such preparations are likely to dull the luster and damage the fabric, causing leaks.

Fisher recommends for this purpose DuPont No. 7 Auto Top Finish. This requires ten or twelve hours to dry, as it has much greater body than the faster drying top dressings, and is far superior.

The top should be washed with **water only**—no chemicals should be used. After it has dried thoroughly, the top dressing should then be applied with a brush. This work takes but a few minutes. If the top has been subjected to unusually trying conditions, two coats of the top dressing should be applied. Many car owners, to be on the safe side, always apply two coats of top dressing, feeling that the precaution, in view of the slight effort required, is well worth while.

CLEANING THE UPHOLSTERY

Upholstery and trimming of Fisher Bodies are comparable to that which is used on the furniture in many of the finest homes. Furniture in the home, however, is protected from accumulation of dust, while the interior of your car is continuously exposed. Especially in the summer time, a car is driven day after day, over all kinds of roads, and subjected to greater or less continuous accumulation of dust. Therefore, the upholstery should be cleaned at least once a month with a vacuum cleaner, using the nozzle with which most vacuum cleaners are equipped. If a vacuum cleaner is not available, the upholstery should be brushed briskly with a whisk broom. It will take only a few minutes to do this, including the cleaning of the trimming on the sides and roof, and it will keep the interior of your car looking fresh and attractive.

Should the upholstery become spotted with grease or other substances, the stains can be removed with any good cleaning fluid, such as is used in removing stains from woolen or silk garments.

After the cleaning fluid has thoroughly evaporated, wet a cloth, wring and apply to the surface and press lightly with a hot flatiron, in much the same manner as a tailor presses a garment.

Steaming the fabric in this manner and rubbing lightly against the nap will raise the nap to its normal condition and will assist in restoring the texture to its original state.

HOW TO PREVENT SQUEAKS AND RATTLES

The body of a motor car is attached and held to the chassis by hold-down bolts. These bolts should be gone over once a month and tightened whenever necessary.

The body rests on pieces of shim or anti-squeak material, which are between the sill of the body and the top of the chassis frame. A shim is placed at each bolt.

If these bolts become loose, the body immediately starts to shift on the frame. This throws an abnormal strain on all joints, and squeaks and rattles usually result.

The majority of squeaks and rattles that develop in an enclosed body can be traced directly to loose hold-down bolts. Therefore, a few minutes devoted once a month to tightening these bolts is time well spent.

This is an essential bit of service that is frequently neglected, and yet it has an important bearing on your own comfort and motoring satisfaction. Take these precautions and the body of your car should continue to function silently and retain its newness, which will be a great advantage to you, when the time comes to sell.

THE WINDSHIELD

The Fisher Vision and Ventilation Windshield is a Fisher contribution to greater safety and enjoyment in motoring.

With the Fisher VV Windshield, vision is unobstructed through a single pane of plate glass, without metal or rubber strips to interfere with a clear view. That means greater safety.

Superior ventilation is the second big feature. Set in felt channels, the shield can be raised vertically with one hand, while in motion, by a mechanical regulator, in the same manner as the automobile windows. Air is forced into the car in two ways:

1st—Two full turns of the regulator raise the shield one inch and air enters the driving compartment through a channel extending the full width of the windshield. The air is directed downward over the front floorboard, from the front of the instrument board. This cool air literally wipes all the hot air off the floor of the car. Dead air pockets or hot corners are entirely eliminated.

2nd—By raising the shield still higher, this flow of cool air is supplemented by air forced horizontally into the front compartment. Any desired degree of ventilation can be obtained.

The VV shield is simple; it is attractive in appearance. There are no quadrants or thumb screws to work loose and cause annoyance.

The only care the ventilator needs is a small amount of hard grease, placed on the bracket where the locking finger operates. This should be done about once every six months. It is necessary to remove the windshield header board, to gain access to these locking fingers. It is recommended that this work be taken care of by your Dealer. All other parts are self-maintaining.

WINDOW REGULATORS

The window regulators on Fisher Bodies are of a special design, made in Fisher plants, and are rigidly inspected several times before they are finally installed in the body. These window regulators are to raise and lower the glass with the least possible effort on the part of the operator; but it must be remembered that they can be broken or put out of order by misuse.

If the regulator is forced after the window has gone as high as it is allowed to go by the body construction, a tremendous strain is thrown on the working parts of the regulator, inasmuch as the leverage on the handle is very great. This is also true when the window is down as far as it will go. Should anything go wrong with the regulator, it is necessary to remove all the trimming on the door, to make repairs. Broken glass, however, can be replaced by simply removing the garnish mouldings, putting the channel on the new glass and installing same, replacing the garnish mouldings.

While this unit is as strong as it is possible to make it in the limited space allowed for its operation, it is not indestructible. With proper usage, however, permanent satisfaction is assured.

DOOR LOCKS

The door locks are manufactured in Fisher plants, from the best material obtainable, according to designs controlled by Fisher.

The only care that the door locks need is a little oil put on the lock bolt once every few months. After applying the oil, work the lock bolt back and forth, so that the oil will work itself into the lock. Then the oil should be wiped off the outside, so there will be no danger of staining one's clothes.

When ordering door lock keys, specify lock number, which may be found by removing the lock barrel, which is held in place by a pin.

DOOR CHECKS

Door checks on Fisher Bodies are placed at the top of the door. The check pin sliding into the slot should have a small amount of hard grease applied about once in six months. In this way, you will eliminate all binding or squeaks which are likely to develop if lubrication is neglected.

DOOR HINGES

The door hinges will not need any special attention, other than to keep the screws tight and to drive in the pins, in case they become loose. However, it is advisable to put oil on these hinges about once every six months, or upon the first indication of the door not operating freely. The frequency of lubrication depends upon the car's usage and the number of times it is washed.

DOOR DOVETAIL BUMPER ASSEMBLY

The wedge plate on the dovetail should have a very slight amount of grease applied about once a month. This keeps the door working freely, inasmuch as this plunger wedges between two plates and pressure is very high at this point. Should the doors begin to stick, a very slight amount of grease will remedy the condition.

AUTOMATIC WINDSHIELD CLEANER

The automatic windshield cleaner used on closed models is actuated by vacuum created in the intake manifold to the motor.

The control of this instrument is located at the left end of the instrument board. To operate the cleaner, turn the controlling valve on the instrument board to the left, thus opening the by-pass. As this opening is made larger, the speed of the cleaner will be increased. To stop the action of the cleaner, turn the controlling valve to the right as far as it will go.

The windshield cleaner needs practically no attention, though at long intervals it is advisable to lubricate the device by removing the cover plate and by adding a few drops of Three-in-One oil to the small moving valves, while they are in motion.

A little surplus oil at this point will have no injurious effect. Oiling should be unnecessary, except at very rare intervals.

The only other point which need be taken into consideration, aside from the adjustment of the rubber holding rod, is to see that the suction line does not have an air leak.

In adjusting the rubber holder rod, be sure to bring the wiper in light contact with the windshield glass. Do not get too much pressure at this point.

SAFETY LOCKS

Every closed body by Fisher is equipped with safety locks which operate on the same principle as the night lock on the door of a house. These locks (which are on the left-hand door of the two-door cars and on all excepting the front right-hand door on the four-door cars) have an inside pawl lever. This pawl lever may be tripped so that the door will lock, or remain unlocked. This feature makes it possible for the driver to automatically lock his doors, excepting the right front door which is equipped with an outside lock which operates with a key.

When the doors are locked, it is necessary to use the key in order to gain entrance to the car. This feature, with the safety locks and the positive locking windshield, makes the car with a Fisher Body as nearly theft proof as an automobile body can be made. There are 250 key changes to a single model. Always remember, therefore, to have your door key on your key ring.

For this reason, keys must be ordered by key number.

THE MEANING OF "BODY BY FISHER"

Fisher Bodies are built with the utmost care and have the advantages of the resources and experience of the largest body-building organization in the world. This organization has made more contributions to the advancement of body designing, building and equipment than any other.

Nothing is more characteristic of the manufacturing policies that govern the production of Fisher Bodies than the rigid system of inspection employed. Each and every part is inspected by experts trained in one line only. At the final assembly, there is a final inspection and the body is not passed until it is found to be perfect in every detail.

Then, and then only, the symbol "Body by Fisher" is attached to the exterior at the lower right-hand corner. This symbol is your guarantee that everything that care, experience and fine workmanship can do has been done, to give you the best motor car body that can be produced.

SIDE CURTAINS (Open Cars)

The side curtains on open cars should receive the same care as the top fabric. Do not brush the windows in the side curtains; they should be wiped with a soft cloth or washed with soap and water. The curtains should be thoroughly dried before being put away, or they will mold.

MISCELLANEOUS DATA

WINTER STORAGE OF CARS

When it is necessary to store the car during the winter months, the following operations should be performed:

1st—Lubricate thoroughly.

2nd—Drain all water from radiator and motor, after which the motor should be run under its own power for a few minutes, to evaporate the water which may remain in any of the pockets in the cylinder head and radiator.

3rd—Remove the storage battery and put it in storage, in one of our Authorized Dealers' places of business.

4th—The tires may or may not be removed. If they are removed, they should be thoroughly cleaned and placed in a dark, comparatively cool room, to prevent deterioration. If they are not removed from the wheels, all four wheels should be jacked up, to relieve the car weight from the tires, and the air may be released from the tubes.

5th—All bright metal parts should be thoroughly coated with vaseline or a rust-preventing grease.

6th—Remove spark plugs and insert a small amount of good cylinder oil in each cylinder; then turn the motor over with the starting crank several times, to insure an even distribution of the cylinder oil in the walls and on the pistons.

ICE ON WINDSHIELD

If you are troubled with snow and ice sticking to the windshield, this condition may be remedied by rubbing a thin film of glycerine on the windshield glass.

TIRE PRESSURE

Examine the tires to see that they are not damaged or under inflated. The air pressure for the Truck (30 x 5" S. S. Cord Tires) should be about 70 pounds in the front tires and 80 pounds in the rear tires. If balloon tires (4.75" x 19") are used, both front and rear tires should carry a pressure of at least 35 pounds. The Commercial Chassis tires (4.75"x19") should carry 35 pounds in front and 88 pounds in the rear.

This is very important, for the reason that if the deflection is too great—i. e., if the tires flatten out too much under load, due to under inflation—trouble is sure to follow.

A drop of even two or three pounds in pressure quickly affects tread wear. The edges of the tread are subjected to a scuffing or wiping action, which rapidly ruins the tread.

To secure best results from balloon tires, they must be inflated to the above pressures and should be tested frequently, to insure that the pressure does not drop more than three pounds before they are again inflated.

A red line is vulcanized into the tire casing used on all passenger cars, visible around the bead and side wall, to insure the tire being properly installed on the wheel. The red line should always be assembled so that it is at the valve stem. The tire, assembled on the wheel in this manner, insures perfect balance. If the tire is assembled with the red line in any other position, the wheel will be out of balance, and this condition will cause front wheel shimmey.

SUMMARY

1—Lubrication

Check motor oil level and add a good grade of cylinder oil when necessary. Lubricate chassis at regular intervals, according to Lubricating Chart (Fig. 44).

2—Cooling System

Keep radiator and cooling system filled with clean water.

3—Storage Battery

Every two weeks, inspect storage battery and add distilled water, when necessary, to insure battery efficiency.

4—Do not "ride the clutch" by slightly depressing the clutch when driving. This practice will cause early renewal of clutch parts.

5—Do not retard spark when starting motor.

6—Do not step on starter pedal the second time, until motor has come to rest, as injury to flywheel and starter pinion may result.

7—Use low speed gear in transmission when starting, rather than second or intermediate, as by so doing early renewal of clutch and transmission parts will be eliminated. The low speed gear is installed for a purpose—let's use it.

8—Save your brakes by leaving the clutch pedal engaged when descending a hill. The motor compression will assist in the braking effect.

9—Consult your Authorized Chevrolet Dealer on your automobile problems—his mechanics are trained; his tools are standardized and approved; his methods are efficient; his labor rates are equitable; he uses Genuine Chevrolet Parts for replacement.